TRADITIONAL RESOURCE MANAGEMENT AND BIOCULTURAL CONSERVATION: A CASE STUDY FOR THE RELATIONSHIP BETWEEN TOMBSTONE TERRITORIAL PARK, THE TR'ONDËK HWËCH'IN AND CARIBOU

by

Susan Heffner
B.A., Simon Fraser University, 1997

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Abstract

Biocultural approaches to conservation include the protection and appreciation of other ways of knowing the environment. Studies in traditional resource management systems illuminate the intricate ways culture has coevolved with nature and provide opportunities to incorporate alternate perceptions of the environment into conservation objectives. This thesis examines how traditional resource management systems contribute to biocultural conservation using a case study for the relationship between Tr'ondëk Hwëch'in First Nation, caribou and Tombstone Territorial Park. Core beliefs about the natural world, including caribou, are central to the strategies Tr'ondëk Hwëch'in employ in resource management. While cultural values and First Nation rights are engrained in park management, a broader understanding of how Tr'ondëk Hwëch'in know the natural world is lacking. A paradigm shift that legitimizes this way of knowing, along with further recognition of Western values attached to parks, needs to occur to achieve biocultural conservation in Tombstone Park.

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1.0 Introduction

The definition and goals of parks and protected areas has been evolving since the first park model was created in the United States in the mid to late 19th century (Hay-Edie, Howard, Martin, and McCandless, 2011). The first park models symbolized a desire to maintain nature in its 'purest' and most untouched form. The Western park concept was based on the idea that nature and culture were separate and parks were areas of pristine wilderness with banks of biodiversity to be studied, conserved and appreciated (Adams, 2005; Cronon 1996; Daniel and Robin, 2016; Gomez-Pompa and Kaus, 1992; Hanna, Clark and Slocombe, 2008). Furthermore, it was felt that human use within parks should be restricted to recreational pursuits (Adams, 2005). It was not until the 1960's and 1970's that the continued exclusion of local Indigenous peoples from parks began to change the existing park paradigm; since this time, the role of people in parks has not only been changing, but hotly debated (Agrawal and Redford, 2009; Brokington and Igoe, 2006; Dearden and Rollins, 2009; Daniel and Robin, 2016; Gavin et al., 2015; Hay-Edie, Howard, Martin and McCandless, 2011; Hanna et al., 2008; Hough and Prozesky, 2010; Miller, Minteer and Malan, 2011; Phillips, 1998).

The inclusion of local people into parks and park management required a paradigm shift in thinking about the roles and goals of parks. New park designations that reflected this inclusion emerged as did new ideas in ethnoecology suggesting humans were part of the ecosystem and have had a hand in modifying most landscapes (Berkes, 2018; Berkes and Davidson-Hunt, 2006; Cocks, Dold, and Vetter, 2012; Ens et al., 2015; Hay-Edie et al., 2011; Hough and Prozesky, 2010; Gadgil, 1998; Gavin et al., 2015; Maffi, 2010; Wallington, Hobbs and Moore, 2005). The increase in attention to the

human dimensions of resource management opened the door to research from diverse disciplines - outside of conservation science - that began to critique and uncover the hegemonic ideologies embedded in parks (e.g., the separation of nature and culture and the ideology of wilderness), and the overall lack of local Indigenous involvement (Adams, 2005; Cronon, 1995; Hay-Edie et al., 2011). More recently, conservation debates have included the notion of biocultural diversity (Cocks and Wiersum, 2014; Ens et al., 2015, 2016; Kassam, 2009; Maffi, 2010; Maffi and Dilts, 2014; Pilgram et al., 2009), and most recently, biocultural conservation (Cocks and Wiersum, 2014; Gavin et al., 2015). While some of this 'new paradigm' may be already firmly rooted in academic vernacular, the practice of incorporating Indigenous worldviews into park management and conservation continues to be limited.

Conservation has long been concerned with biodiversity, or the need to protect a variety of genes, species and ecosystems, but the role that cultural diversity should play in this protection and the interactions between the two is not well understood (Gavin et al., 2015; Hill, Cullen-Unsworth, Talbot and McIntyre-Tamwoy, 2011; Jackson, 2010; Kassam, 2009; Maffi, 2010; Maffi and Dilts, 2014; Maffi and Woodley, 2010; Pilgrim and Pretty, 2010; Pilgram et al., 2009). Cultural diversity refers to the variety of cultural responses and the knowledge, practices, innovations and outlooks these responses contain and that have co-evolved with the environment (ibid). The global importance of this concept hinges on the idea that diversity in both systems increases our global capital, our life insurance, and our collective capacity to adapt to change (Gavin et al., 2015; Maffi, 2010; Pilgrim and Pretty, 2010). Maffi (2010: 14) describes a loss in biocultural diversity as a weakening of the "whole fabric of life – the web of interdependence that is

absolutely vital to our common future." At the local level, this concept has significant implications for conservation goals as it suggests that cultural relationships (not just values) within parks also need to be protected (Maffi, 2010; Maffi and Dilts, 2014; Pilgram et al., 2009).

While not all cultural practices are 'good for nature' (Berkes, 2018; Turner and Berkes, 2006), placed-based and resource dependant peoples often have relationships that center around fostering and sustaining nature (Berkes, 2018; Gavin et al., 2015; Hough and Prozesky, 2010; Turner, 2008; Turner and Berkes, 2006). Recognition in conservation that the cultural practices involved in these relationships physically shape landscapes (e.g., through the selection of plants and animals) and can have a positive effect on biodiversity forms part of the new paradigm in conservation that includes and tries to integrate social and ecological systems (Gavin et al., 2015; Hough and Prozesky, 2010; Stevens, 2014).

Tombstone Territorial Park in the Yukon Territory is an example of a new park model for Canada where a First Nation is actively and co-operatively involved in the establishment, planning and management of the park. Rich in cultural and natural values, the park reflects an effort to sustain and maintain not only the immense biodiversity of this region, but also Tr'ondëk Hwëch'in First Nation's deep cultural connection to the area. Tr'ondëk Hwëch'in have a long history of interaction with the Tombstone area and a long history of interaction with caribou in the area. The Indigenous management system that has evolved out of the long-standing connection between Tombstone, Tr'ondëk Hwëch'in and caribou was explored in this research.

Using the knowledge-beliefs-practice framework suggested by Berkes (2017: 45), this research aims to recognize the links between culture and the environment within the traditional management system of caribou. The goals of this research were to develop an understanding about the interactions in this system and how these links relate to new goals in conservation, specifically biocultural diversity, and the conservation goals within Tombstone. This research provides a much needed local case study of how nature and culture are related in an Indigenous resource management system and provides a case study for a new park model for Canada – one established by a First Nation community during land claims. To discuss this case study further some definitions are needed.

1.1 Definitions Used in the Thesis

This thesis is about the relationship between Tr'ondëk Hwëch'in and the environment and how this relationship is reflected in Tombstone Park. The focus is thus on traditional ecological knowledge, traditional resource management, biocultural diversity and Indigenous approaches to conservation. Defining these concepts will aid in understanding some of the context between Indigenous worldviews and conservation. First a discussion about the guiding principles that shape the Tr'ondëk Hwëch'in worldview is presented.

1.1.2 Tr'ëhudè

The following excerpt is taken from a document prepared by Tr'ondëk Hwëch'in with the aim of communicating some guiding principles involved in their worldview. These principles are embedded in this research and important to the thesis so are stated in the Introduction.

> "Our value system forms the foundation for our daily code of conduct. This code, or set of known social expectations and behaviors is called Tr'ëhudè in our Hän language. It does not easily translate directly into Canadian English but the concepts embedded in the term should be quite familiar with most people. It includes our moral and ethical code, or set of acceptable actions and behaviors, that allow us to live "in a good way" – as our Elders would say. This is not a set of absolutes though. Like our worldview and our culture our Tr'ëhudè must remain flexible and ever-changing to ensure that it remains relevant and reflects our present and future realities. So long as we strive to live in a good way – as determined by our present circumstances – we are exercising Tr'ëhudè. Another way of thinking about Tr'ëhudè is to consider it our traditional law, the commonly accepted set of behaviors that guide our everyday life and that are sanctioned as appropriate by our community at any given time and in any given circumstance." (Beaumont, in progress: 9). The ways that we act on these principles can be infinite. This ability to practice Tr'ëhudè, in all of its variability and with regard for its underlying principles, is what made life in this environment possible. (pg. 10)

1.1.3 Traditional Ecological Knowledge

There is no universally accepted definition of Traditional Ecological Knowledge (TEK) (Berkes, 2018). However, TEK has been defined as a cumulative and dynamic knowledge of the environment that represents multi-generational experience (Sherry and Vuntut Gwich'in, 1999). The definition applied by Berkes (2018: 7) is "[t]raditional ecological knowledge is a way of knowing; it is dynamic building on experience and adapting to changes. It is an attribute of societies with historical continuity in resource use and on a particular land". TEK is passed on through oral tradition and is based on years of close contact with the natural world (Berkes, 2018). While TEK is traditional in the sense that it is mutigenerational, it is not static but rather a flexible, adaptive dynamic and fluid knowledge. For the scope of this thesis it is important to remember that ecological knowledge is only one part of a group's overall culture (Berkes, 2018: 62). Furthermore, the use of traditional in this term does not mean "in the past". As this study

demonstrates, TEK continues to exist, but is also situated and contested. Excerpts from Tr'ondëk Hwëch'in members contained in Chapter 5 illustrate how the term "traditional knowledge" is widely used to communicate with non-First Nations and is the term used in this thesis. Western

1.1.3 Traditional Resource Management Systems

Traditional resource management systems (TRMS), or traditional resource management, has been defined as "the application of TEK to maintain or enhance the productivity, diversity, availability, or other desired qualities of natural resources or ecosystems" (Lepofsky, 2009: 61). The word traditional does not refer to a static system, but one that has been passed down generationally (ibid). Lertzman (2009) points out that a management 'system' is the sum of all the actions that guide a system toward its desired goals and objectives. This includes "social constraints, the knowledge they embody, and the behaviours they enable" (ibid; 340) and can also include customary law (Moller, Kitson and Downs, 2009). It is important to note that the terms "management" and "resource" do not translate into an Indigenous perspective and "human-environment relationships" is more reflective of an Indigenous view (Berkes, 2018: 48). I will maintain the term TRMS in this thesis with the recognition that the results described in this thesis are from a Western perspective and Western terminology is therefore considered useful to further the discussion. Furthermore, within Western thought there has been a need to legitimize Indigenous peoples' relationships with the environment as purposeful, intentional and based on empirical knowledge as well as cultural knowledge (Berkes, 2018; Lepofsky, and Caldwell, 2013). Western terms can therefore be helpful.

1.1.4 Biocultural Diversity in Conservation

Diversity in life requires both living forms (biological), and the worldviews or cosmologies of what life means (i.e., culture, Pilgram and Pretty 2010). The overlap and links between cultural and biological diversity is referred to as biocultural diversity. This concept acknowledges the links and interdependence between culture and the environment (Maffi, 2010: 7). Biological diversity relates to the variation in genes, species or ecosystems, while cultural diversity refers to the various worldviews, languages, knowledge, practices and value systems of different human societies (Maffi, 2010; Maffi and Dilts, 2014; Pilgram and Pretty, 2010). Diversity in cultural systems forms the "ethnosphere – a global web of human cultures that is deeply interlinked with the biosphere." (Maffi, 2010: 19). A biocultural approach to conservation recognizes these links as critical to conservation efforts and calls for conservation actions that support and sustain these relationships and the unique worldviews they encompass.

This thesis will use the International Union for the Conservation of Nature (IUCN) (https://www.iucn.org/content/defining-biocultural-approaches-conservation accessed February 14, 2018) definition of biocultural approaches where "conservation actions made in the service of sustaining the biophysical and socio-cultural components of dynamic, interacting and inter-dependent social-ecological systems". Other definitions include approaches or actions to sustain the "biophysical and sociocultural components of dynamic, interacting, and interdependent social-ecological systems" (Fernandez-Llamazares and Cabeza, 2017 citing Gavin et al. 2015).

1.2 Positioning my Stance of the Thesis

The research described herein attempts to understand an epistemological perspective that is grounded in a different knowledge system than my own. When attempting to interpret the realities of interviewees', the interviewer's own subjectivity must be recognized (Creswell, 2007 and Guba and Lincoln, 2004). My interests in this topic are influenced from personal and professional experiences further explained in Chapter 5 but a brief introduction to some of these biases is necessary first.

I am not a First Nations person and was raised in a Euro-Canadian family with Euro-Canadian values. This study is an attempt at an *emic* understanding from an *etic* perspective. I do not, and will never, understand the First Nation lived experience. I have attempted to approach this research with humility and openness to learning. I was very uncomfortable interpreting the results of this research due to my belief that Tr'ondëk Hwëch'in have their own voice and is more than capable of communicating their relationship with nature and caribou. It was therefore important to recognize during this research and in this thesis that I do not write this thesis from an Indigenous perspective but from my own (Western), with a strong belief that cross-cultural research can serve as an important bridge between Indigenous and Western thought when done respectfully.

Recognition of this and my own personal biases are integral to this study. I would therefore also like to recognize that this thesis serves my personal benefit to earn a Master's degree and I make no claims as to how it will benefit the community. The research was conducted and designed in collaboration with the Tr'ondëk Hwëch'in Heritage Department to ensure it matched their research objectives but this department will decide how the raw data collected will benefit the community. I will produce

another product (yet to be determined) in collaboration with the department to support their objectives.

A line from a story an Elder told me years ago, on another research project has stuck with me and is relevant to all cross-cultural studies about knowledge. In this story the Elder explained when she was young she asked her Grandmother a lot of questions and finally her Grandmother replied; "your mouth is too small to ask those questions". I approach this research as a process in my own cross-cultural learning with the recognition that it will be a life long journey of learning. Further explanation of personal and institutional biases identified and included in this research and the research process is contained in Chapter 5. I know turn to the research problem, objectives and questions.

1.3 Research Problem and Research Questions

Links between cultural and biological diversity have been well documented geographically and demonstrate how significant biodiversity physically overlaps with significant cultural diversity (Cocks and Wiersum, 2014; Gavin et al., 2015; Hill et al., 2011; Maffi, 2010; Maffi and Dilts, 2014; Maffi and Woodley, 2010; Pilgram et al., 2009). However, "the characteristics of linkages between culture and biodiversity are not yet well elucidated and clear conceptual frameworks for assessment remain elusive" (Hill et al., 2011:574). More discussion about how people and nature interact is still needed (Berkes, 2018; Cocks et al., 2012; Ens et al., 2015, 2016; Gavin et al., 2015; Maffi and Dilts, 2014; Maffi and Woodley, 2010; Pilgrim et al., 2009). As Maffi (2010: 9) states, "detailed studies at the local level are needed to understand the causal links between the environment and cultural values, beliefs, institution, knowledge systems, practices and languages, and the changes that affect the persistence or loss of these links." However,

case studies that explore these relationships within Canadian parks specifically remain scant (but see Buggey, 1999 and Davison-Hunt, 2010). A lack of understanding of how local Indigenous people have, and continue to, interact with our park landscapes is an oversight, particularly in light of the important ways that these cultural exchanges influence biodiversity.

Traditional resource management systems are one of the four bridges to explore the links between nature and culture (Pilgram et al., 2009:101). Traditional resource management systems are the result of adaptive responses that have evolved over generations and are becoming an important bridge to explore the links between nature and culture. These systems integrate practices, beliefs and knowledge into a range of habitats and species through the co-evolution of culture and the natural environment because they are linked social-ecological systems (SES) that reflect deep historical and cultural connections to particular species and places (Berkes 2018, Laird, Awung, Lysinge and Ndive, 2011; Stewart, Keith and Scottie, 2004; Lepofsky and Caldwell, 2013; Maffi, 2010; Maffi and Dilts, 2014; Mathews and Tuner, 2017; Stevens, 2014 and Turner and Berkes, 2006) that highlight land use legacies from generations of sustainable resource use (Turner and Berkes, 2006). So if TRMS represent one of these bridges, how might they contribute to new conservation goals and approaches to conservation?

Using the knowledge-belief-practices complex (Berkes, 2018), the objectives of this study were to:

1. Develop an understanding of the traditional management of caribou and how knowledge, beliefs and practices of caribou are interrelated in this system and connected to the Tombstone landscape.
2. Explore how the values within this management system relate to:

a) new conservation paradigms striving to protect biocultural diversity and;
b) the conservation goals within Tombstone Territorial Park.

The following research questions were used to guide these objectives:

1. How are knowledge, beliefs and practices of caribou interrelated in the way the Tr'ondëk Hwëch'in :
    a) manage and know caribou; and
    b) manage and know the Tombstone area?

2. How does, or might, this Indigenous management system inform conservation goals within Tombstone Territorial Park and/or biocultural approaches to conservation.

1.4 Thesis Outline

This thesis is broken into five chapters. Chapter 2 reviews the literature involved in protected areas (PAs) including scientific, social and ideological beliefs that underpin Western conservation and protected area management. This includes an explanation of the paradigm shifts that have occurred in ecology and conservation science that have led to new conservation goals that seek to integrate people and cultures. These ideologies include new and old concepts like wilderness, the division of nature and culture, SES, resilience, adaptive capacity, cultural and biological diversity and cultural landscapes. The Literature Review then moves to discuss knowledge and how TEK and Indigenous or TRMS are linked. Chapter 3 is an introduction to Tr'ondëk Hwëch'in and the study area. Chapter 4 describes the specific methods used in the study and is followed by the results of the thematic analysis (Chapter 5). Chapter 6 provides an interpretation of the results and a discussion about how they relate to existing literature on the subject and is followed by the Conclusion chapter.

2.0 Literature Review

2.1 Introduction

The exploration of TRMS within biocultural conservation approaches requires a significant amount of background on conservation science and shifting paradigms, along with background on TEK, TRMS and caribou management. This chapter includes literature from several different disciplines that contribute to the study. The focus of this review is limited to broadening necessary definitions and an examination of relevant studies to explore Western perspectives on conservation.

Conservation has undergone some significant changes in the past few decades; these changes have been facilitated by paradigm shifts in ecology and conservation management. The first section of this chapter will describe how Western beliefs in science, specifically ecology, shape conservation goals. This is followed by a discussion of concepts that have, and continue to, alter the ways that protected areas are conceptualized and managed including: the nature/culture dichotomy; the cultural landscape concept; and biocultural diversity. A discussion on TEK follows and focuses on how it has been considered in TRMS research. Examination of TRMS research and existing research on traditional knowledge (TK) and TEK of caribou in the Canadian north follow to outline the current state of research as it pertains to TRMS.

2.2 Ecological Paradigms in Western Science

Berkes (2004) describes the conceptual shifts that occurred in ecology over the past few decades as threefold: to include humans in the ecosystem; from expert-based approaches to a more participatory approach; and from a linear, reductionist view of

ecology toward a systems view. Studies in classic ecology were based on the belief that an ecosystem would tend toward equilibrium and homeostasis if left undisturbed (Wallington, Hobbs and Moore, 2005). It was thought that an ecosystem could function best when it had reached an optimal climaxed state of equilibrium. This stance in ecology is very much derived from the notion that nature is mechanistic and predictable and therefore conducive to scientific inquiry (Oetelaar and Oetelaar, 2007; Pilgram et al., 2009). This 'balance of nature' view has since been criticized in favour of a multi-equilibrium cycle. In this cycle, referred to as the adaptive renewal cycle, the system does not stop once it has reorganized after a disturbance event (Berkes and Davidson-Hunt, 2006; Gunderson and Holling, 2002; Wallington et al., 2005). Instead, the system proceeds through a reorganization stage and toward a memory stage where the system can perpetuate itself and start again, producing multiple states each different from the other.

In the classic ecology model, humans are not part of the natural system; however, current models consider human actions as not only capable of disrupting biodiversity but also in shaping ecosystems and creating biodiversity (Gadgil, Berkes and Folke, 1993; Lepofsky, 2009; Phillips, 1998; Wallington et al., 2005). Biodiversity conservation therefore cannot overlook the active role of humans and their interactions with the environment, or the contributions of human-modified landscapes to biodiversity (ibid).

The inclusion of humans into the dialogue over biological diversity protection helped shape the concept of SES approach in conservation. This management approach recognizes the importance, and multitude of interactions between social and ecological systems. Social-ecological systems approaches are becoming increasingly important in

conservation science in an attempt to understand the multitude of connections and feedbacks between humans and the environment (Berkes, 2018; Berkes, Colding and Folke, 2003; Berkes and Davidson-Hunt, 2006; Gavin et al., 2015; Oetelaar and Oetelaar, 2007, 2008; Phillips, 1998; Pilgram et al., 2009). How we conceptualize and understand the ecosystem has obvious implications for what we know about the environment and how we choose to manage it (Berkes, 2004, 2017; Berkes and Davidson-Hunt, 2006; Gavin et al., 2015; Oetelaar and Oetelaar, 2007, 2008; Turner and Berkes, 2006).

These new Western paradigms and conceptualizations of nature have significant implications for conservation goals and protected area management and beg the question, what are we trying to protect? The next few sections will explore this question further with a discussion about the initial goals of parks, the ideologies embedded within these goals and how these goals are contested and changing.

2.3 Protected Area Management

The establishment of parks and protected areas in Canada mirrored other protected areas in North America, Australia and New Zealand, and resulted from Western scientific and socio-cultural beliefs (Dearden and Rollins, 2009; Hanna et al., 2008). Parks were initially based on an exclusionary model or what is sometimes referred to as protectionist or fortress conservation approach (Daniel and Robin, 2016; Hanna et al., 2008). Central to the exclusionary model was the classic linear and equilibrium ecological model, the ideology of a pristine wilderness, and the belief that state-run, top-down management systems were most effective in the conservation of ecosystems (Phillips, 2003). Protected areas in Canada initially focussed on potential revenue generation via tourist opportunities but became known as areas where biodiversity could

be preserved for the future and common good (Claus, Chan and Satterfield, 2010; Dearden and Rollins 2009; Phillips, 2003). Unfortunately, this sentiment was very much based on prevailing colonial administrative governments and resulted in the displacement of local Indigenous people who had economic, spiritual and cultural connections to these areas (Brokington and Igoe, 2006; Claus et al., 2010; Phillips, 2003).

Displacement from parks had several negative effects on Indigenous groups including economic, cultural/social and physical effects (Agrawal and Redford, 2009; Brokington and Igoe, 2006; West, Igoe and Brockington, 2006, Rodriguez, 2017; Stevens, 2014). Of critical importance was the displacement of people from life-sustaining resources and the suppression of "non-scientific forms of knowledge and ways of knowing nature, along with the social practices of groups that are informed by such knowledge" (Rodriguez, 2017: 1).

The inclusionary model includes one step toward mending some of these ties. This new model for parks and protected areas signifies a shift away from generating knowledge strictly for the purpose of protecting biological species and their habitats, and toward generating knowledge that integrates both social and ecological systems (Agrawal and Redford, 2009; Berkes, 2018; Claus et al., 2010; Gavin et al., 2015 and Hanna et al., 2008; Daniel and Robin, 2016).

New models that emerged to contend with this theoretical shift included community-based conservation, co-management or collaborative management and Indigenous or community conserved areas (Berkes, 2004, 2007; Houde, 2007; Hanna et al., 2008; Turner and Berkes, 2006). Community conserved areas are the oldest form of protected area whereby local peoples conserve physical spaces, including the most

obvious example of sacred groves (Hill et al., 2011). However, Indigenous management efforts like these typically seek to sustain and maintain 'relationships' to places, rather than isolated physical spaces (Jackson, 2010). This point will become increasingly important throughout this thesis.

Phillips (2003) notes that the shift to the inclusionary model largely resulted from a struggle to account for the livelihood needs of local Indigenous groups due to social changes relating to equality in the 1960's and 1970's. However, Hanna et al. (2008), explain the exclusionary model was still in place through to the 1980's, but eventually became surpassed by Integrated Conservation and Development Projects in the developing world. Wali, Alvira. Tallman, Ravikumar and Mecedo (2017:1) state that "in recent decades, the global environmental conservation community has come to appreciate that their initiatives must engage with local people if they are to succeed". The United Nations Educational, Scientific, and Cultural Organization, International Union for the Conservation of Nature Protected Area Categories V and VI and the Man and Biosphere Reserve Programme all identify conservation values within inhabited landscapes (Daniel and Robin, 2016: 232). However, many of the goals within protected areas are still aimed at mitigating human impacts to ecological integrity, especially in developed nations (ibid).

Shifts in conservation paradigms that include biocultural frameworks have more recently included concepts of well-being that expand the role of conservation to ensuring conservation goals match Indigenous peoples' objectives and agendas (Daniel and Robin, 2016; Rodriguez, 2017; Wali et al., 2017). An ecosystem services approach has also emerged as a way to understand the ways that people benefit from nature (Ingram,

Redford and Watson, 2012). Ecosystem benefits within the ecosystem services approach have been expanded to include political, cultural, economic and health and well-being (Barber and Jackson, 2017). These new frameworks require a critical examination of what each group involved in conservation areas consider a benefit.

Benefits in protected areas have typically understood in terms of biodiversity or economic benefits and have not always considered that Indigenous groups often value the enrichment of subsistence livelihoods over economic benefits (Wali et al., 2017). An overlap in benefits between Western and Indigenous groups tends to be the need for biodiversity protection but the ways social, cultural, political and economic benefits intersect with biodiversity benefits remains a challenge (Barber and Jackson, 2017; Ingram et al., 2012; Wali et al., 2017, Rodriguez, 2017). However, these new conceptual frameworks seek to go beyond biological and economic well-being to include end goals of human well-being (Noe, Keeler, Kilgore, Taff and Polasky, 2017) that are often a closer match to Indigenous needs to balance human and non-human, supernatural and moral dimensions that regulate cultural relationships in conservation areas (Wali et al., 2017; Rodriguez, 2017).

Another concept that has recently been proposed in biocultural conservation is termed the multiple evidence base framework. Within this framework, each knowledge system has value and validity in its own context helps recognize that a direct translation of knowledge is not realistic and therefore focuses on complementary knowledge and the co-production of new knowledge through collaboration (Tengo et al., 2017: 24): "Achieving such collaboration will require moving from studies "into" or "about" Indigenous and local knowledge systems, to equitable engagement with and among these

knowledge systems to support mutual investigations into our shared environmental challenges".

There have been numerous debates of the merits and/or pitfalls of the inclusionary model that are outside the scope of this study. However, it is important to note that while the need to implement SES and biocultural approaches into decision-making and develop policies for sustainable use of resources that promote local livelihoods is generally accepted within conservation, the tools to achieve this are lacking. Moreover, despite several attempts to couple SES in conservation management, there is still uncertainty and disagreement about what this coupling should look like or how to know when it has been achieved (Berkes and Davidson-Hunt, 2006; Carter, 2010; Davidson-Hunt, Peters and Burlando, 2010; Neufeld, 2008; Pilgram et al., 2009; Salomon et al., 2018; Stevens, 2014; Toupal, 2003; Turner and Berkes, 2006; Xu, Tashi, Fu, Lu and Melick, 2006).

Many suggest that this debate is ultimately a conflict of values at which the dichotomy between nature and culture, and that "[i]ndeed, the social construction of protected areas embeds that conflict into their very existence as institutions" (Hanna et al., 2008:6). Kassam (2009) believes that conservation policy and management systems are caught between a division of nature and culture and that this conundrum is typically discussed as a gap between Western science and TEK. At the heart of this gap or divide is the overarching philosophical, social, cultural belief that people are either part of, or separate from, nature.

2.4 The Nature/Culture Dichotomy

How we perceive nature has an impact on known and accepted realities and beliefs about nature (Gomez-Pompa and Kaus, 1992). As the preceding sections

suggests, Western conceptualizations and understandings of nature have been changing over the past few decades. However, some suggest that the balance of nature, or equilibrium model, and the notion of a pristine wilderness are still deeply embedded in protected areas and permeate protected area management systems (Cronan, 1996; Phillips, 1998; Pilgram et al., 2009) and policy-makers and conservation planners continue to define ecosystems in Western terms with these Western notions (Adams et al., 2014). Importantly, the Western notion that humans and culture are separate from nature has come under more recent scrutiny as conservation management systems struggle to integrate other forms of knowledge and other cultural perceptions and values of nature. Adding to this conundrum is emergent Western knowledge that cultural and biological diversity are inextricably linked and need to be considered together (Cocks and Wiersum, 2014; Gavin et al., 2015; Pilgram et al., 2009). These new concepts run counter to Western conceptualizations of nature that are found within parks.

According to the US Wilderness Act of 1964, wilderness included areas "where man himself is a visitor who does not remain" (cited in Gomez-Pompa and Kaus, 1992: 271). Wilderness represents nature in its most pristine and untouched state. Wilderness has an intrinsic value and has been seen as a form of insurance for biodiversity conservation (Cronan, 1996). The notion of an untouched wilderness is built on a misinterpretation of the historical and cultural relationship between people and the environment and the European intellectual tradition of the Enlightenment that valued the separation of nature, progress, modernization and scientific reason (Carter, 2008; Cronan, 1996; Neufeld, 2008; Phillips, 1998).

Neufeld (2008) discusses part of the division between nature and culture in North America from a historical context when he describes how governments were actively engaged in state building at the time of settlement. State building involved creating an identity and sense of shared history that European immigrants had left behind. Part of this identity was rooted in nature, specifically the untamed and pristine wilderness: "[N]ature offered the shared experience of the frontier and the common interest in the material transformation of wilderness into farms and cities – into civilization" (Neufeld, 2008:183). This wilderness ideology was at odds with local Indigenous peoples whose subsistence relied on these natural resources and who held very different beliefs about nature. Guernsey (2008) also explores the colonial construction of wilderness and focuses the discussion around the cultural construction of landscape and how space, place and power relate to it. Guernsey refers to wilderness as areas of "buried epistemologies" because wilderness has served to bury First Nation ideologies and presence in nature.

Carter (2010) describes the Western construct of wilderness as the 'naturalistic gaze'. Carter believes that this gaze silences Indigenous voices, prevents Indigenous engagement and denies the historical construction of the landscape. The author adds that Western institutional management reflects a dominant product-driven process of management "rather than the fluidity of multiple meanings, associations and complexities of events and intangible qualities that are inherent in places of significance to certain cultural groups" (Carter, 2010:406). Important in this discussion is the idea that landscapes are contested social, ideological and physical spaces and that the relationships between nature and culture are complex, culturally constructed and not always shared.

Several Indigenous groups perceive their relationship with the land and landscape as sacred and within this relationship people regard themselves as an integral part of a holistic and living landscape (Berkes, 2018; Buggey, 1999; Cronan, 1996; Nadasdy, 2003; Nelson 1983; Mitchell and Buggey, 2000 and Oetelaar and Oetelaar, 2008; Turner, 2005). Places in the landscape are sacred places of power that relate directly to the spirit world. The spirits of these powerful places must be respected and appeased in order for human endeavors to be successful (e.g., hunting endeavors). Traditional knowledge, oral history, myth, legend and place names relate directly to the landscape and the resources within them. Spiritual respect and proper acknowledgement are central to preserving the relationship between people and the land (Berkes, 2018; Buggey, 1999; Nadasdy, 2003; Turner, 2008). "Keep your land clean, keep your animal, that's your friend. You look after then they'll look after you. You look after your water, land, trees, you look after it, respect it. That's our spirituality" (Percy Henry, cited in Dobrowolsky, 2003:60)

The unity and reciprocity between humans and the environment, or culture and nature in Indigenous worldviews is distinctly different than Western views. An important example is that the conservation of resources does not preclude use of resources (Berkes, 2018; Turner and Berkes, 2006, Turner, 2005). One concept that has emerged to try to bridge the gaps between Western and Indigenous ideologies about nature is the cultural landscape.

2.5 Cultural Landscapes

The cultural landscape concept was first introduced by geographer Carl Sauer to explore the role of humans in shaping the landscape (Miller and Davidson-Hunt, 2010). Cultural landscapes can be seen as the interface between nature and culture or the

physical expression of interrelated relationships, processes and links between nature and culture (Hill et al., 2011). The World Heritage guidelines refer to cultural landscapes as areas where specific techniques of sustainable use and a spiritual relationship with nature are commemorated (Mitchell and Buggey, 2000).

The cultural landscape concept attempts to recognize both the ecological and cultural values embedded in the landscape by exploring the interactions between the social, cultural and ecological - between people and their homelands (Bridgewater and Bridgewater, 2004; Davidson-Hunt et al., 2010; McGregor et al., 2010; Miller and Davidson-Hunt, 2010). Shedding light on ways in which Indigenous people have shaped the environment through land management activities has been an important aspect of cultural landscape and helps to dispel that myth that Indigenous peoples lived of the bounty of the land without agency or that any conservation of resources was merely a by-product of smaller population sizes (Stephenson, 2008; Lepofsky, 2009; Lepofsky and Caldwell, 2013; Mathews and Turner, 2017). Instead, research suggests that most wilderness landscapes are legacies of land management and sources of cultural knowledge and knowledge exchanges - they are cultural and natural landscapes (Amanatidou, 2005; Berkes and Davidson-Hunt, 2006; Bridgewater and Bridgewater, 2004; Cinner and Aswani, 2007; Colding and Folke, 2001; Davidson-Hunt, 2003, 2006, 2012; Davidson-Hunt et al., 2010; Hill et al., 2011; Miller and Davidson-Hunt, 2010; Toupal, 2003).

Landscapes are important products of the connections between and co-evolution of people and places. They contain place names and stories that tell of "long-lived relationships between the people and the landscape" (Parlee et al., 2005:30). Stories told

on the landscape guide and inform about ethics, morals, laws, and resource uses (ibid) and the interaction between Tr'ondëk Hwëch'in and caribou is likewise 'written on the land'. The interconnection between people, places, and practices identified in this research is used to explore concepts like biocultural diversity.

2.6 Biocultural Approaches to Conservation

The resilience of SES is very much dependent on the simultaneous health of both cultural and biological systems (Berkes, 2004). The biocultural concept is of significant interest to heritage conservation and studies (see International Journal of Heritage Studies, 2011, 17:6) and for the past few decades has featured prominently in International bureaucracies like the Convention on Biological Diversity, the International Union for the Conservation of Nature and the United Nations Educational, Scientific and Cultural Organization (Gavin et al., 2015; Hay-Edie, 2001: 527; Maffi and Woodley, 2010:xx). The need to understand the links between biological and cultural diversity is amplified by the fact that Western scientific management systems lack the tools to integrate and recognize this link and the increased rate with which these connections are being lost (Fernandez-Llamazares and Cabelza, 2017; Maffi and Dilts, 2014; Pilgram and Pretty, 2010; Pilgram et al., 2009). Advocates of biocultural conservation are sounding the alarm that a loss of biocultural diversity represents a loss of biodiversity that supports humanity (Maffi, 2010: 14). It also represents a loss of our collective human heritage (ibid).

Cultural perceptions and views of the environment represent cultural diversity and can be "akin to biodiversity as the raw material for evolutionary adaptive responses" (Berkes, 2018: 97). Maffi suggests (2010:19) that the diversity of adaptive responses to

the environment matter most to biocultural diversity and that the main goal of this approach to conservation is to "understand and support these adaptive tools, as well as the ability for these tools to develop from within their cultural context when new circumstances arise that require new adaptations." Meanwhile, these complex systems are under continual threat from increasing globalization forces (Fernandez-Llamazares and Cabelza, 2017; Hay-Edie et al., 2011; Hill et al., 2011; Pilgram et al., 2009; Pilgram and Pretty, 2010). The worldviews, knowledge and cultural values associated with nature and the environment must be better understood (Cocks et al., 2012; Ens et al., 2015). Gavin et al., (2015) suggest this 'ethnosphere' is eroding at a greater rate than the biosphere. This makes this research all the more necessary and relevant.

Biocultural approaches to conservation are attempts to bridge the gaps between biological and cultural diversity that persist. Research in this area has highlighted the importance of Indigenous knowledge to guide and inform conservation goals (Fernandez-Llamazares and Cabelza, 2017, Gavin et al., 2015). It has also been suggested that: "Halting the trends of biocultural diversity loss requires reshaping the ontologies and epistemologies framing conservation" (Fernandez-Llamazares and Cabelza, 2017: 1). The IUCN also emphasize the need for respect and the incorporation of different worldviews and knowledge systems into conservation planning (https://www.iucn.org/content/defining-biocultural-approaches-conservation accessed February 14, 2018). Acceptance of the validity of other knowledge systems and ways to know the environment is key to achieving biocultural conservation (Gavin et al., 2015). Article 8 (j) of the Convention of Biological Diversity, an international legal document for conservation, states that those involved in conservation should "respect, preserve and

maintain knowledge, innovations and practices of Indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity" (cited in Gavin et al., 2015: 6). With this comes the recognition that biodiversity relies on human stewardship to "make all life – including human life – possible" (Maffi, 2010: 7). Conservation is well positioned to lead the charge on ensuring these links are maintained and strengthened and in doing so can provide much needed examples for new frameworks that incorporate other ways of knowing into modern resource management.

Indigenous management systems involve livelihoods and practices and highlight the extensive range of knowledge, beliefs and practices people have for their environment (Berkes, 2018; Lepofsky and Caldwell, 2013; Gadgil, 1998; Lepofsky, 2009; Mathews and Turner, 2017; Pilgrim and Pretty, 2010). The importance of beliefs and values of nature has been discussed in the preceding sections as they pertain to Western science, protected areas and the division of nature and culture; now the discussion turns to explore the knowledge systems TRMS stem from.

2.7 Traditional Ecological Knowledge (TEK)

As mentioned in the Introduction, the definition used here for TEK is a way of knowing as a process and as information about the environment. It is an attribute of societies with historical continuity in resource use on a particular landscape (Berkes, 2018). TEK is passed on through oral tradition and is based on years of close contact with the natural world (Berkes, 2018; Sherry and Vuntut Gwich'in, 1999). While TEK is traditional in the sense that it is mutigenerational, it is not static but rather a flexible, adaptive dynamic and fluid knowledge (ibid). In fact, it is these final characteristics that

have become of great interest to conservation science in the past decade. Particularly in light of the recent recognition that ecological systems are also fluid, dynamic and complex, non-equilibrium systems and the fact that Western management systems have had a difficult time responding quickly to change and ensuring the adaptive renewal and capacity of a system will remain (Berkes, Colding, and Folke, 2000).

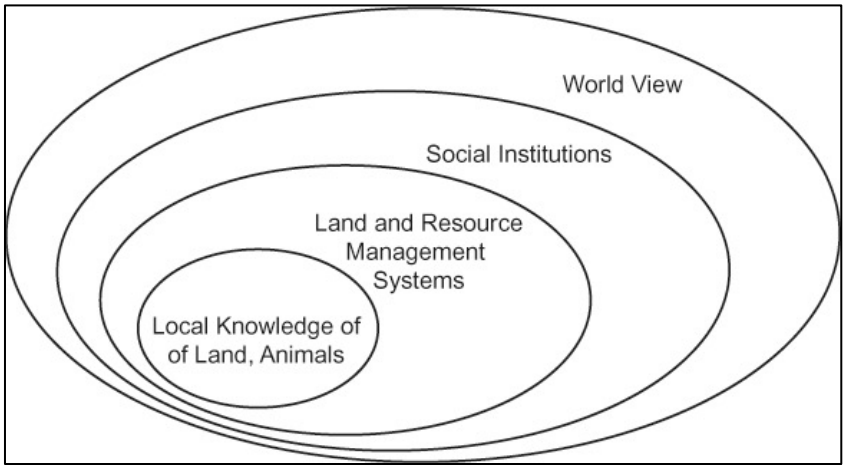
TEK is transmitted through stories and observations as people travel and inhabit landscapes (Berkes, 2018; Mathews and Turner, 2017; Pilgram et al., 2009). This becomes the social memory that guides actions toward the natural world and its resources and when sustained through ceremonies, story-telling and song, can serve as a kind of "cultural insurance" (Pilgram et al., 2009:104).

TEK is the knowledge base that informs the cultural institutions of environmental management. Research in TEK within a conservation context has significant overlap with research in traditional resource management because they cannot be separated. Houde (2007) defines traditional resource management as one of the six "faces" of TEK.

This research uses the belief-knowledge-practice framework provided by Berkes (2018) (see Figure 1). Within this framework traditional knowledge has four interrelated levels: worldview; social institutions; land and resource management systems; and local empirical knowledge of land and animals. As this research will demonstrate, there is significant overlap of all levels. Worldview encompasses all levels and provides the meaning and perceptions people have for their environments because traditional knowledge systems are typically embedded in a moral and ethical context where the separation between nature and culture does not exist. The innermost level is the local knowledge of plants and animals, or empirical knowledge of plants and animals most

often used by Western scientists attempting to include TEK. Resource management systems use TEK to integrate a set of practices, or tools/techniques. As Berkes notes (2018: 47) these "ecological practices require an understanding of ecological processes, such as the functional relationships among key species and an understanding of forest succession." These practices are guided by and monitored by the social institutions including the "rules-of-use" for resources (ibid). One of the objectives of this study was to explore the interrelatedness between these levels through an exploration of the traditional resource management system for caribou.

Figure 1: Levels of analysis in traditional knowledge and management systems (Berkes, 2018)



2.8 Traditional Resource Management Systems

Mathews and Turner (2017: 173) note that previous anthropological conceptions of "hunter-fisher-gather societies assumed natural species abundance and low human populations allowed people to simply harvest food and other resources as needed, requiring little intervention in natural ecosystem productivity." Understanding the

biophysical and cultural interactions involved in TRMS has become fertile ground to investigate concepts included in the new conservation paradigm like SES, resilience, adaptive learning, and adaptive management (Berkes, 2018; Berkes and Turner, 2006; Berkes and Davidson-Hunt, 2006; Cinner and Aswani, 2007; Colding and Folke, 2001; Davidson-Hunt, 2006; Davidson-Hunt and Berkes, 2003; Gadgil, 1998; Moller et al., 2009). Table 1 shows the multidisciplinary research areas that have been involved in this research.

Table 1 Research areas and key findings in traditional resource management (TRM) and traditional ecological knowledge (TEK).

Research Area	Academic Influence	Key Findings
Knowledge transmission in TEK	Anthropology	TEK is adaptive management, importance of adaptive learning.
Conservation in TRM systems	Conservation Biology, Ethnoecology, Anthropology and Archaeology.	Conservation or restriction of access and use of resources found across cultures. Managed by social institutions, and develops through adaptive responses and social learning.
Sustainability in TRM systems	Ethnoecology, Anthropology and Archaeology.	Sustainable through adaptive management/learning and moral, spiritual obligation and cultural norms.
Social Institutions (cultural rules-in-use, belief systems) involved in TRM	Cognitive Anthropology, Ethnography, Ethnoecology.	Informed by TEK, represented in spiritual, moral belief systems. Social memory and learning
How people modified/managed the environment	Conservation Science, Ethnobiology and Archaeology.	Dispel myth of wilderness and highlights human agency in management. Understand the cultural landscapes
Knowledge integration in conservation	Conservation Theory Co-management Community conservation	Respect, communication, legitimacy must be given to other ways of knowing - pluralism. Realization that one way of knowing is not realistic or working for environmental management.

A significant body of research on TRMS is growing steadily and is illuminating the sophisticated ways hunter-gather and fisher groups, pastoralists and agriculturalist have "managed" resources and landscapes in purposeful and intentional ways to expand, regulate, and increase the abundance of many culturally important species that result in higher abundance, productivity, availability, better quality and diversity (Berkes and Davison-Hunt, 2006; Berkes, Colding and Folke, 2000; Cinner and Aswani, 2007; Cocks et al., 2010; Colding and Folke, 2001; Daniel and Robin, 2016; Ens et al., 2016; Gadgil, 1998; Gadgil, Berkes and Folke, 1993; Gavin et al., 2015; Lepofsky, 2009; Lepofsky and Caldwell, 2013; Mathews and Turner, 2017; Miller and Davison-Hunt, 2010; Moller et al., 2009; Oetelaar and Oetelaar, 2007). A spectrum of activities has been identified throughout the literature.

The most recent regional publication includes research from the North-West Coast for plant and marine species (Mathews and Turner, 2017). Here the authors highlight strategies like landscape burning, habitat creation, bounding of resource areas, transplanting, selective and rotational harvesting (see Mathews and Turner, 2017, for a full list). The authors also synthesize various "social management strategies" including monitoring, land tenures, division of labour, seasonal rotation, trade for diversity, feasting and sharing of resources and knowledge transmission. Strategies employed for key species can include: harvest selection by size, seasonal harvesting, constrained access to species, restricted harvest during the reproductive stage and the use of escape mechanisms (i.e. fish traps). This recent paper highlights the many strategies that have been found within TRMS around the world even though it focusses on marine management.

Much of the literature on TRMS related to conservation, like those from Berkes (2018), Davidson-Hunt (2006), Davidson-Hunt and Berkes (2003), Colding and Folke (2001), Cinner and Aswani (2007), Davidson-Hunt and Berkes (2003), Davidson-Hunt (2006), Gadgil (1998), Mathews and Turner (2017), Miller and Davidson-Hunt (2010), Moller, Kitson and Downs (2009), Oetelaar and Oetelaar (2008), Parlee and Berkes (2006) and Turner and Berkes (2006), explore how knowledge is transmitted, produced and expressed in TRMS. The way that TEK is transmitted through cultural institutions (mechanisms for rules-of-use) is seen as essential for the continuation of conservation knowledge because it is linked to the ability for a group to sustain resources and to learn new adaptive responses to inevitable ecological and cultural changes (ibid). These institutions are believed to contribute to conservation learning and help to regulate resource use in an adaptive way. These studies argue that the learning process involved in TRMS (using traditional knowledge), is what makes the system adaptive, flexible and resilient. TEK is therefore referred to as a type of adaptive management due to its ability to contend with uncertainty, unpredictability, variability and social learning (ibid). Research that has contextualized TEK with a conservation lens are important considerations to how TRMS can contribute to conservation today.

One of the most prominent articles on the development, transmission and evolution of conservation knowledge comes from Turner and Berkes (2006). They discuss traditional learning systems within management systems and how it promotes the conservation of resources. The authors contend that several factors contribute to conservation knowledge including: beliefs that promote conservation practices like respect and no waste; the communication of conservation actions through oral history,

myth and stories and social relationships and institutions for teaching cultural constraints and for rules of use that promote respectful actions and approaches that serve conservation goals. They suggest that learning and observation leads to a sophisticated understanding of ecosystems (p. 497) and state: "Many examples exist of conservation practices including harvest selection by age, sex, size, and reproductive stage and season for various species, as well as the preparing and maintaining of productive habitats and foods for certain key resource species through the use of fire and other means" (p. 498).

Within Indigenous management systems, spiritual and moral beliefs play a significant role (Berkes, 2018). Mathews and Turner (2017: 183) state:

> "With time, as knowledge, social organization, and technologies continue to develop, the species and environments are entwined into complex belief systems and worldviews in which cultural practices and perspectives become encoded in language, stories, taboos, ceremonies, art, and ethics…leading to habits and ethics that allow for the development and long-term maintenance of sustainable cultural landscapes and seascapes"

Identifying these beliefs and how they interact with local and traditional knowledge, practices and worldview has shed light on the interconnections between these components and form an important foundation in this study.

While research in Canada on strategies and social mechanisms within TRMS is growing for marine and plant resources and the use of fire in forest succession, wildlife studies on TRMS is still rather limited and caribou management strategies are typically mentioned within the context of co-management.

2.9 Existing Literature for Traditional Management Systems for Caribou

There is growing body of literature on traditional knowledge of caribou in the Canadian north (Berkes, 2018; Bali and Kofinas, 2014; Beaulieu, 2012; Kendrick, 2002;

Kasstan 2016; Padilla, 2010; Padilla and Kofinas, 2014; Parlee, Manseau and Lutsel K'e Dene First Nation, 2005; Polfus et a., 2016; Sandris, 2012). The majority of these studies focus on the social institutions or rules-of-use associated with caribou harvesting or how groups monitor caribou cycles and migration patterns or track caribou health. In-depth research on the knowledge and practices associated with caribou does exist and have focussed on the rules of use and relationship between people and caribou (Bali and Kofinas, 2014; Berkes, 2018, Kasstan, 2016; Sherry and Vuntut Gwich'in 1999; Wray and Parlee, 2013). However, studies that describe specific resource management strategies associated with caribou harvesting are limited to Berkes (1999, 2018) and Padilla (2010). There is a lack of academic literature referring to specific management strategies groups employed to sustain or maintain caribou herd populations within the context of TRMS and a complete lack of academic research in the Yukon in general.

Many of the peer review articles published on traditional uses of caribou in Western Canada are not fully contextualized or situated within the knowledge system. This is also true for other documents published in response to specific management plan needs (Gwich'in Social and Cultural Institute, 2011; Wildlife Management Advisory Council (North Slope) and Aklavik Hunters and Trappers Committee, 2009). Exceptions include collaborative studies between Parlee, Manseau and Lutsel K'e Dene First Nation (2005); Kasstan's PhD work (2016) with the Ethen-eldèli Denesųłiné; Padill's Master's work (2010) with the Tr'ondëk Hwëch'in, Vuntut Gwitch'in and Teetl'it Gwitch'in; Wray and Parlee's (2013) work on Teetl'it Gwich'in rules of use; and recent work by Polfus et al. (2016) in the Sahtu Region of the NWT. Padilla's (2010) work is

particularly relevant as she investigated traditional knowledge of caribou leaders. This work is further discussed in Chapter 6.

Publications that do contextualize caribou within a cultural context are limited to some articles from a caribou workshop in 2010 (Rangifer, Special Issue No.20, 2012) and to publications resulting from First Nations' initiatives to get their own messages about their relationships with caribou. These articles provide much-needed First Nation perspectives and voices. A relevant example for this study is the article "Nothing Wasted: Traditional Uses of Caribou" published by Tr'ondëk Hwëch'in (Tr'ondëk Hwëch'in; http://trondekheritage.com/our-places/black-city/what-makes-black-city-special/caribou/traditional-hunting-methods/). These perspectives highlight the connections between respect, values, belief, customary laws and responsibility. The use of stories and narrative permeates through this knowledge sharing and provides the cultural context from which to begin to understand this relationship.

2.10 Summary of Chapter 2 Content

Theoretical and conceptual shifts have already occurred that position humans as part of the environment. It is generally accepted that people create and manage environments and that this has an effect on biodiversity and the overall biological system. Humans are not only agents of change, but also have agency to direct change that, depending on scale, can be beneficial to ecosystems. Direct benefits include human's ability to create and maintain biodiversity.

The involvement of local Indigenous peoples into conservation management in the form of co-management and community-based management and the designation of cultural landscapes into heritage conservation are also contributing to changing beliefs

about what conservation goals should be. Biocultural diversity appears to be an 'all encompassing' concept with great potential to bridge some of the current gaps between nature and culture in conservation. As such, new approaches to biocultural conservation are being posed. However, in order to better identify and assess biocultural conservation and the goals that follow those assessments, we need to know more about the 'bridges' that link natural and cultural systems within conservation areas. Traditional resource management systems represent one of these bridges between nature and culture and are the result of adaptive responses that have evolved over time. These systems integrate practices, beliefs and knowledge into a range of habitats and species through the co-evolution of culture and the natural environment. They are SES that reflect deep historical and cultural connections to particular species and places. It is therefore suggested that a better understanding about the connections between beliefs, knowledge and practices in TRMS can inform new conceptual shifts and conservation goals discussed here.

As previously noted, the objective of this research is to gain an understanding about the traditional management of caribou, a key resource for Tr'ondëk Hwëch'in. An exploration of how caribou, Tr'ondëk Hwëch'in and the Tombstone area are interconnected and have co-evolved will help explore shifting concepts in conservation like biocultural diversity. The following chapter will provide additional context regarding the study area and Tr'ondëk Hwëch'in.

3.0 Tr'ondëk Hwëch'in and the Study Area

The study area is within Tr'ondëk Hwëch'in traditional territory. Tr'ondëk Hwëch'in are a Yukon First Nation based out of Dawson City, Yukon. They describe themselves as a "diverse mix of families descended from Hän, Gwich'in, Northern Tutchone and other language groups" (Tr'ondëk Hwëch'in website). *Tr'o* means hammer stone and refers to the tool used to hammer in the salmon weir stakes at the river mouth while *ndëk* means river and *Hwëch'in* people. The literal translation is "the people who lived at the mouth of the river" (specifically the Klondike River; Gerald Isaac, cited in Dobrowolsky, 2003). The following is a very brief review of documented Tr'ondëk Hwëch'in ethnography taken from Osgood (1971) and Dobrowolsky (2003). An emphasis has been placed on the subsistence strategies related to caribou, followed by a summary of post-contact changes that have had an influence on the cultural landscape within Tr'ondëk Hwëch'in territory and their traditional economy.

3.1 Pre-contact Subsistence

The traditional seasonal subsistence round of Tr'ondëk Hwëch'in involved late spring/summer aggregation of groups at selected fishing camps along the Yukon River, chosen for the availability of migrating salmon. The fall saw a dispersal of the group as food stores required additions or replenishment. Caribou were traditionally hunted with bow and arrow, snares, and wooden/stone fences with corral structures. They were also hunted from canoe with spears as the animals were crossing lakes or rivers. The Fortymile caribou herd regularly crossed the Yukon River near its confluence with Fortymile River (Hammer and Thomas 2006). During their fall migration, the Porcupine Caribou Herd migrate into the Blackstone Valley in Tombstone Territorial Park. The

Hart Caribou Herd is also found within the park. Caribou were, and still are, an important resource.

> That's how they lived off the country. They live there like that year round and all by caribou. That's all they live from. Everything they have done, winter, spring. Then by June they go to Dawson (Annie Henry cited in Dobrowlsky, 2003: 61).

3.2 Post-contact Changes

An early immigration of miners in the Dawson area had become a steady flow by the mid-1880s. The influx of people forced Tr'ondëk Hwëch'in to adapt new modes of living. As mineral finds were made across their territory, trading posts like Fort Nelson, built at Stewart River in 1885, became more common. Tr'ondëk Hwëch'in began successfully trading intensively with these new developments and over the winter of 1887-1888, Tr'ondëk Hwëch'in hunters delivered over 1,000 kilograms of meat to trading posts near Forty Mile (Dobrowolsky 2003:14).

The Klondike Gold rush began in 1896, and once word reached the outside world, hundreds of prospectors began to flock to the Klondike River to stake their claims. This discovery would mark perhaps the most pivotal moment in Tr'ondëk Hwëch'in history, as "the influx of people set in motion the growth of an infrastructure composed of legal, political, economic, and social apparatus that would have far-reaching effects on the Han and everyone living in the region" (Mishler and Simeone 2004:14). By the spring of 1897, Tr'ondëk Hwëch'in fishing village of Tr'ochëk at the confluence of the Klondike and Yukon rivers had been overrun and Tr'ondëk Hwëch'in were displaced from their native fishing grounds. By 1898, over 50,000 people had arrived in the north and settled in the area of the newly established Dawson City, which lay across the Klondike River from Tr'ochëk (Mishler and Simeone 2004:15).

After the displacement from Tr'ochëk at the mouth of the Klondike River in 1897, the majority of the group relocated to Moosehide (named for its location at the confluence of Moosehide Creek and the Yukon River) and continued to set up fish camps during the salmon runs and move inland during the fall and winter hunts (Dobrowolsky 2003:29). Previous archaeological investigations of Moosehide suggest the area had been occupied as early as 8,000 years before present (Dobrowolsky 2003:31).

In 1902, the Yukon government built the first winter road between Whitehorse and Dawson City (Mayo Historical Society 1990:184-186). Roadways would continue to develop in the area over the coming decades and were punctuated by the establishment of the Alaska Highway in 1943 (Dobrowolsky 2003:94-95). The transition to travel by road signified the end of the sternwheel riverboats when, in July 1942, the *Whitehorse* made the last stop in Klondike City by a sternwheel paddleboat. This form of transportation had supported many First Nation groups settled along the Yukon River and, like many others, Tr'ondëk Hwëch'in would once again adapt to the changing social landscape around them. As many small towns that had been established to support the sternwheel riverboat industry were abandoned, many Tr'ondëk Hwëch'in would continue to live in the Klondike Valley taking seasonal work, doing road construction and maintenance while trapping in the fall. After the abandonment of Fort Selkirk in the late 1940s, several Han families returned to the mouth of the Klondike River and settled at their ancestral fishing camp at Tr'ochëk, now known as Klondike City (Dobrowolsky 2003:95-98).

3.3 Tombstone Territorial Park

Tombstone Territorial Park is located in the east-central portion of the Yukon Territory and covers 2,2000 square kilometres of area north of Dawson City (Yukon

Government website) (Figure 1). The Dempster Highway, which opened in 1979, trends through the western portion of the park. The area is popular with tourists heading up the Dempster Highway. The area is primarily a 'nature' park without an extensive trail network or facilities other than an interpretive center and campground. The traditional name for the Tombstone mountain range is *Ddhal Ch'el* or "among the sharp, ragged rocky mountains" (Locke, 2000). The park includes a number of different habitats. The southern portion is located at the edge of the boreal forest as it transitions to tundra and then transitions again into alpine at higher elevations. The diversity of species within this area is extensive, as are the diversity and number of heritage sites. The archaeological record extends back at least 8,000 years, with the potential for older sites as portions of the park were ice-free as part of Beringia (Tr'ondëk Hwëch'in and Yukon Governments, 2009). Big game species occur here in record numbers, considering the latitude, and the park straddles the continental divide, resulting in a number of fish assemblages (ibid).

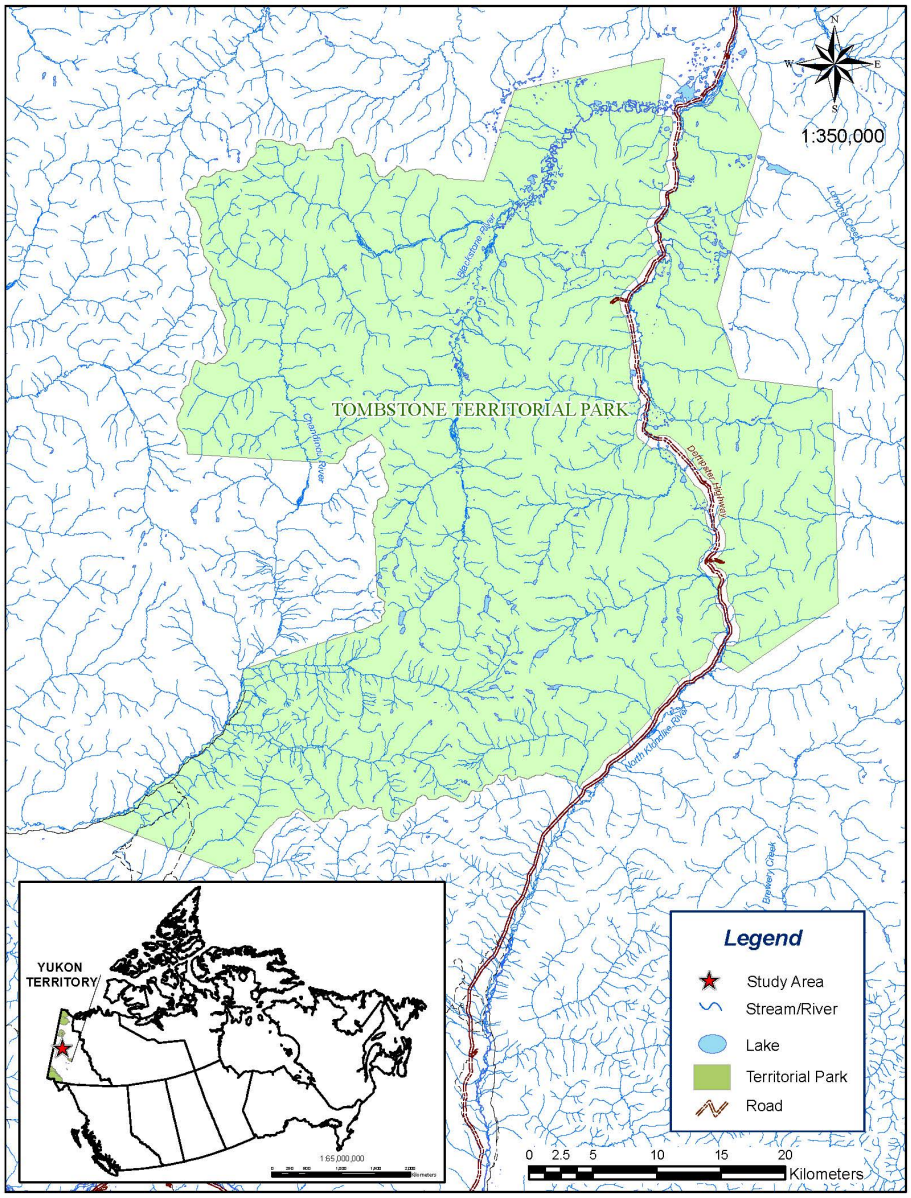
Tombstone Territorial Park was established as part of Tr'ondëk Hwëch'in Final Agreement. When the First Nation entered into land claim negotiations in the 1980's, they selected the park area as a rural land selection (Tr'ondëk Hwëch'in and Yukon Governments, 2009). When the Yukon Government also expressed interest in conserving the area, both governments decided to select it is as a Special Management Area under the Umbrella Final Agreement, Section 10. This unique designation is a combination of community-based and co-management conservation models. Unlike most parks in Canada, Tr'ondëk Hwëch'in values have been expressed and considered from the beginning and are embedded in the management plan for the park. The First Nation was directly involved in setting the park objectives and these form part of the land claims

Final Agreement. Park objectives include the protection of a natural area but also "to recognize and protect the traditional and current use of the area by Tr'ondëk Huch'in [sic] in the development and management of the Park" (Tr'ondëk Hwëch'in and Yukon Governments, 2009: 75). Further objectives include the recognition of Tr'ondëk Hwëch'in history and culture. Management in the park is guided by a Steering Committee comprised of two Yukon Government and two Tr'ondëk Hwëch'in members.

Tr'ondëk Hwëch'in were not only instrumental in the conservation of this area but also continue to actively manage it, identify with it and use it for traditional harvesting practices. Portions of the park have been zoned as traditional use area for Tr'ondëk Hwëch'in citizens. A lack of park regulations prevents park managers and staff from closing and portions of the park and associated trails to the public for traditional harvesting activities, but the public is directed away from these areas by those working at the interpretive centre.

The rights of Tr'ondëk Hwëch'in to fish and hunt within the park are included within Section 16 of the Tr'ondëk Hwëch'in Final Agreement, and allows members the right to harvest any species at any time of the year anywhere within their traditional territory (including the park) without Yukon Government permits (Government of Yukon website). The Porcupine Caribou Herd that winter in the park is managed separately by the Porcupine Caribou Management Board (Tr'ondëk Hwëch'in and Yukon Governments, 2009). However, Tr'ondëk Hwëch'in are part of this board and members are free to hunt this herd for food. The park is also open to hunting from non-First Nations with a permit.

Figure 2. Map of Tombstone Territorial Park



3.4 Summary of Chapter 3

Historical events that have impacted Tr'ondëk Hwëch'in community provide important context to the social and cultural changes that have occurred – it provides context to the cultural landscape. This historical context is also important to contextualizing subsistence and economic changes that have impacted the transmission of

traditional knowledge through practices and have thus impacted the TRMS while modes of transportation and access to new areas by road also changed land use and impacted this system. How this context contributes to this research is further discussed in Chapters 5 and 6.

Tombstone Territorial Park is an example of co-management, community-based management whereby local people are/were actively and co-operatively involved in the establishment, planning and management of the park. What makes this park unique is that it was created out of Tr'ondëk Hwëch'in Final Agreement and its protection is included in this land claim agreement. The park places continued traditional resource use above Western park values like recreation and wilderness protection. Rich in cultural and natural values, the park reflects an effort to sustain and maintain not only the immense biodiversity of this region, but also Tr'ondëk Hwëch'in 's deep cultural connection to the area. Tr'ondëk Hwëch'in has a long history of interaction with the Tombstone area and a long history of interaction with caribou. The Indigenous management system that has evolved out of this long-standing connection between Tombstone, Tr'ondëk Hwëch'in and caribou is explored here.

4.0 Research Methods

4.1 Methodological Approach

In order to investigate the TRMS for caribou and how this relates to biocultural approaches to conservation, one must consider how the environment is conceptualized in Tr'ondëk Hwëch'in community and in Western conservation. My research approach assumes that nature is socially constructed and that perceptions of nature are dynamic and fluid. Furthermore, there are multiple realities about nature and ways to know the environment are ingrained in knowledge systems. I therefore assume the epistemological and ontological stance of relativism that reflects on the subjectivity of all knowledge and reality (Guba and Lincoln, 2004; Creswell, 2007).

This research was also guided by a post-colonial lens recognizing Western epistemologies involved in conservation concepts and in the construction of parks. Parks are a Western concept that does not easily translate into Indigenous conservation or stewardship concepts and this tension is examined throughout the study. Post-colonial theory focuses on power relations between nation-states and Indigenous peoples and lend a specific interpretation of power relations in a post-settler/colonial society (Spivak, 1990). While a post-colonial lens was applied to this research, the scope is not focused on the power relations between the two governments involved in this research. Instead a post-colonial lens was used to illuminate the issues involved in the epistemological and ontological differences between Western and Indigenous knowledges involved in conservation. The scope of this research is therefore framed within a cultural and

historical context but a detailed analysis of the socio-political context is not provided. However, my assumptions about Western research must be stated.

Indigenous critiques discuss how all research is colonialist and imperialist because of the formal rules and regulation of it within colonial institutions (Tuhiwai Smith, 1999: 7). They further suggested that employing a post-colonial lens illuminates Western ideologies involved in university research. The scope of a Master's thesis limited my ability to employ truly participatory methods. Furthermore, the academic institutional requirements for reporting limited my ability to produce a written document that is meaningful to both the academic and local community. What became very apparent throughout this research was how complicated doing Western research on Indigenous perspectives is.

There are several recognized approaches to data collection and analysis. The following section will discuss my decision to use an ethnographic and ethnoecological approach to this research.

Ethnography is an approach or a methodology that "refers to a social scientific description of a people and the cultural basis of their peoplehood" (Palys, 1997: 203). Ethnography involves emic (insider) and etic (outsider) perspectives and is the most common method for cross-cultural studies. Ethnoecology is a sub-discipline of environmental anthropology that has long been involved in TEK research and was one of the first approaches to recognize epistemological pluralism: there are several ways of knowing the environment (Berkes, 2018; Miller et al., 2008; Raymond, Fazey, Reed, Stringer, Robinson and Evely, 2010). Ethnoecology attempts to investigate emic understandings of the environment, or what Bernard calls "the grammars of cultures"

(cited in Miller and Davidson-Hunt, 2010:404). Ethnoecology has also shifted the focus to the cognitive understandings a group has of their environment (Berkes, 2018). Studies in ethnoecology have helped break down ethnocentric ideas about Indigenous knowledge and have become important platforms to investigate issues of cultural and biological diversity.

Ethnography is an approach or a methodology that "refers to a social scientific description of a people and the cultural basis of their peoplehood" (Palys, 1997: 203). Ethnographic research typically involves participatory field methods where the researcher spends long periods of time in a particular setting and tries to understand that setting from the perspective of those who are in it (Palys, 1997 and Bernard, 1988). However, ethnography can be any "small scale research that is carried out in everyday settings; uses several methods; evolves in design through the study; and focuses on the meaning of individuals' actions and explanations rather than their quantification" (O'Reilly, 2005: 2). Ethnography is the most common method for cross-cultural studies and differs from other methodological approaches in that it attempts to describe and interpret a collective, culture-sharing group (Bernard, 1988; LeCompte and Schensul, 2010; Palys, 1997 and O'Reilly, 2005). The key difference that sets ethnographic studies apart from other qualitative approaches is culture. The ethnographic approach attempts to interpret, theorize and understand the phenomena though a "theoretically informed interpretation of the culture of the community, group, or setting" (LeCompte and Schensul, 2010:11). The concept of culture is a central component of my research. This research is not only concerned with how a culture perceives the environment, but also the sense that cultures make of the environment and how these beliefs are manifested in resource management

systems. The methods used in this research were therefore developed from ethnography and ethnoecology and included semi-directed interviews and participant observation.

4.2 Methodology for Analysis

Rather than starting with a hypothesis, I relied on thematic analysis to inductively develop a pattern of meaning for the collected data. Thematic analysis focuses on themes or patterns that emerge from the data in an attempt to explore and understand an issue, rather than reconcile the various definitions that may exist for an issue (Aronson, 1994 and Stirling, 2001). Vaismorad et al. (2016), state that thematic analysis is appropriate for research that will "focus on the explicit description of the content of communication with a limited reflection on its implicit meaning." Ethnographic methods are commonly analyzed with thematic analysis because it allows for the development of themes from patterns of lived experience (Arnoson, 1994). Thematic analysis is also very compatible with constructivist approaches to research in that it can be applied independent of theory and epistemology, across a range of epistemological approaches (Braun and Clark, 2006). These qualities make thematic analysis an appropriate choice for cross-cultural analysis.

Thematic analysis requires a great deal of familiarity with the data (Attride-Stirling, 2001; Aronson, 1994; Stirling, 2001; Vaismorad et al., 2016). Coding is a process to identify sections of text that represent the basic themes that have emerged from the first review of transcripts (Braun and Clark, 2006; Saldana, 2012). That is, they reflect recurrent patterns that make up the themes (Stirling, 2001). Next the coded data is reviewed looking for salient, significant and common themes. This re-reading of the texts in already coded segments allows for the identification of underlying patterns that were not obvious during the initial reading of the texts (Saldana, 2012). These themes

are refined by reducing the data again into data sets that represent sets of significant themes. These sets are grouped into similar groupings which become the thematic networks (Arnoson, 1994; Braun and Clark, 2006; Saldana, 2012); Decisions about how themes are grouped are based on the available content and described in a codebook.

Rigorous attention to documenting reporting methods and producing clear documentation at every stage of the research enhances rigour in qualitative analysis results (Bailey et al., 1999; Baxter and Eyles 1997). Narratives and quotations are used to illustrate how these interpretations and themes were derived, unless the participant has requested that quotes from their interview are not used (see Information Letter, Appendix B). However, participant reflections in their own words strengthen the validity of the data and provide transparency in the analysis (Bird et al., 2009). Excerpts from raw data also help to ensure that the interpretation is directly linked to words and narrative provided by the participants and that the voice of the community is heard.

4.3 Researcher's Position

My overall knowledge in First Nation history, including historical interactions with the state, has been gained through Western institutions during my undergraduate degree in archaeology and anthropology and through my professional career as an archaeologist. I have been working in the Cultural Resource Management (CRM) field as an archaeological consultant for the past 20 years. Throughout this time, I have interacted and worked collaboratively with several First Nation groups in British Columbia (BC) and the Yukon. For the past 10 years, I have also facilitated TK and Traditional Land Use (TLU) studies within the environmental assessment context and directly for First Nations heritage planning and public interpretation. My involvement in

these latter studies has been focussed on documenting land use and traditional knowledge related to the archaeological record, or the pre and post-contact histories of BC and the Yukon. I have been very fortunate to work collaboratively with many First Nations and conduct work for a cultural centre and a museum exhibit. Public archaeology and education is a passion of mine, particularly in light of the general public's lack of knowledge of pre-contact histories I have encountered throughout my career. This experience and my undergraduate schooling have made me aware of pre-contact subsistence activities and TEK in general. My knowledge of TRMS in reality was very limited, but I did apply my past experience in data gathering to this study.

I came into this study through both professional and personal connections. My husband and business partner at the time had developed a professional working relationship with Tr'ondëk Hwëch'in and acted as my "gatekeeper" by introducing me to Tr'ondëk Hwëch'in Heritage Department. During my research, our consulting company won a contract to construct a GIS-based archaeological potential that involved Tr'ondëk Hwëch'in. This project included a traditional land use component involving semi-directed interviews and field visits with Elders. I discussed a potential conflict with my thesis work with my supervisor and liaison. All felt there was no conflict and my liaison welcomed the chance for me to spend more time with the Elders to gain greater context. The focus of that study was very different than this thesis work; however, it did allow me opportunities to get to know the Elders better and provided me with a more in-depth understanding of traditional land and resource use. I felt this work was very beneficial to my overall understanding of Tr'ondëk Hwëch'in history, land use and worldview that has help shape this research. That project was submitted and completed in 2014.

As a result of my professional connection to the community, my position as an archaeologist or a university student became muddled at times. During the first year of this research there was another MA student conducting research in the community. She and I attended a few culture camps at the same time. I noticed that her position as a researcher seemed clearer to the community. Because of my work schedule and personal life, I was not able to live in the community during my research so I generally went to the community every 3-6 months for anywhere from one to three weeks at a time. I was in and out of the community from 2012 to 2015. As a Yukon resident, I was less of an outsider in some ways, but always an outsider in the community and always in a researcher position. I became a familiar face, especially while also working on the other project. This allowed me to get to know the community in an extended timeframe (compared to a 'normal' Master's thesis).

I believe returning back to the community on a regular basis showed my dedication and allowed me to gauge which Elders might be willing to talk to me and when. I made a point of getting to know people by mostly observing and participating in culture camps for the first year. I only interviewed one Elder and other community members who worked at the Tr'ondëk Hwëch'in government office during that year. I started interviewing Elders in 2014 after I had time to get to know them a little. At the end of one interview, an Elder told me that he liked the way I had been around for a year before I started asking questions and then said as a result he told me things in the interview he may not have told me a year ago. I don't think he was only referring to an issue of trust. I learned very incrementally over the course of my research and each trip I came away with a broader understanding. The questions I was asking for this research

are deeply embedded in a way of knowing the world. Taking the time to be immersed in that world greatly enhanced my analysis. However, it also made the analysis challenging because how I frame the analysis is tightly bound to Western thought and language which often made me feel I had learnt nothing about what the Elders were trying to teach me. In hindsight I believe this is the challenge of fitting Indigenous concepts (as I interpret them) into Western words. However, I do think my unorthodox approach to this research was beneficial in numerous ways. While it extended my timelines significantly, it allowed me time to be immersed in daily life with the community while not living in the community.

4.4 Research Process

The specific methods I used to collect the data included semi-structured interviews and participant observation. During my initial meeting with Tr'ondëk Hwëch'in Heritage Department, I discussed my research interests in traditional resource management. This focus matched some of their research goals and we began talking about potential research topics. After further discussions, Tr'ondëk Hwëch'in Government agreed to support and facilitate this research and I established a liaison to be my point of contact. I worked with my liaison to develop the interview and research questions and I submitted my proposal for their review prior to finalizing it with my committee at UNBC. The Heritage Office supplied me with a copy of Tr'ondëk Hwëch'in Traditional Knowledge Research Protocol that was submitted to the UNBC ethics committee along with my proposal. The protocol outlined the ground rules of respect, data collection, and storage and the use of Tr'ondëk Hwëch'in Government

archives, the processes for sharing information and control of the research methods and how the knowledge will be represented.

I received my letter of approval from the Ethics Board on April 11, 2013 but had already spent time in the community, had been introduced to some of the Elders and was invited to some community events in 2012 including a "Tombstone Tuesday" Elders visit to the park in July of 2012 and "First Hunt" a culture camp for caribou hunting in November of 2012. I attended First Hunt with my husband and daughter who were also invited. My relationship to the community at this time was in relation to the consulting business I co-owned with my husband who had done considerable work in the community and as someone who was going to be conducting research with the Heritage Department for this project. These visits and time with the community helped me shape my proposal and research questions.

After receiving my letter of approval, I was formally introduced as a researcher and university student to community Elders at a Spring Elders Camp in April of 2013. During a round-table discussion I was able to introduce myself and briefly discuss my research topic. I received a list of potential interviewees from my liaison and we drafted letters introducing my topic and myself to potential participants. I then set out to contact people on this list and conduct interviews.

4.5 Data Collection

Data collection included individual semi-structured interviews, participant observation and informal chats while in the community and at various community events.

4.5.1 Interviews

Seventeen participants in total, nine males and eight females were interviewed using a semi-structured approach. Participants were from the following three groups:

- Group A – Elders (n= 5): This group was identified by my community contact. These are knowledge specialists and experts who are respected members of the community with traditional knowledge about the research topic. I was referred to these participants by my community liaison. These participants are identified as Elders in this thesis and are also included in references to "all community members".
- Group B - Community Knowledge Holders (n= 6): This group was also identified by my liaison as community members with knowledge of caribou, caribou hunting, the study area landscape or the Park. This group included community hunters (First Nation and non-First Nation), Canadian Rangers, Tr'ondëk Hwëch'in Fish and Wildlife Stewards, Renewable Resource Council members, Porcupine Caribou Herd Management Board members and Tombstone Steering Committee members. These participants are referred to as "community members" in this thesis and are included in references to "all community members"
- Group C - Government Employees and Managers (n=6): This group included Wildlife Biologists, Park Managers and Park staff including Park rangers. These participants are referred to as "park staff" in this thesis because of their governmental affiliation with the park but not all are currently employed in the Park.

An interview guide is found in Appendix A, and the information letter and consent form are found in Appendix B. All participants were provided the Project Information Letter and consent form in Appendix B. Elders were interviewed at Tr'ondëk Hwëch'in Government office, at their home or at culture camps. One Elder was interviewed twice due to their knowledge of the study topic. Community members were interviewed at Tr'ondëk Hwëch'in Government office and culture camp and park staff was interviewed in the park or at the Parks Branch Office in Dawson. Elders were paid an honorarium for their time.

One community member participant did not want to be digitally recorded or have me take notes during the interview. I therefore recorded my thoughts with a digital recorder after the interview and transcribed this into my field notes. All other interviews were recorded with a digital recorder. Seven interviews were conducted in 2013. I then applied for an extension from the UNBC Ethics Board to continue data gathering into May of 2015. Eight more interviews were conducted in 2014 and two took place in 2015. I conducted interviews and participant observation from April 2013 to April 2015 during this research. Details of my field visits and participant observation are discussed below.

4.5.2 Field Methods

Learning and listening occurred during the entire study through participation in culture camps, informal and opportunistic chats around the community and encounters while at the Heritage Office. General observations and numerous informal conversations with the community were a very important component of the study. This information helped me understand the history, current issues, politics and dynamics within the community. Field notes from events and impromptu conversations were taken or recorded verbally by digital recorder. Field notes included general and detailed descriptions of events or discussions. The other form of participant observation that occurred was during hunting activities. I attended First Hunt in 2014 as a researcher and volunteer youth supervisor. Observations during hunting practices were documented with field notes and photographs. Preliminary descriptions observed in this setting were noted and used as complimentary data in the analysis to explore cultural connections between people, places and resources (Palys, 1997).

4.6 Data Analysis

Some data analysis was conducted after each interview and after each community visit. The ideas expressed here become the basis for other semi-directed interviews. That is, an iterative process was used to direct questions for subsequent interviews. This allowed the questions to focus on culturally appropriate themes that became apparent during the iterative interview process. Data analysis included data from field notes and transcribed interviews. Interviews and field notes generated during the research were transcribed and then coded for themes using thematic analysis. The analysis focussed on themes or patterns that emerged from the data. The process was both iterative and inductive.

An outside source transcribed the interviews. Transcripts were reviewed and edited using the digital recordings. All transcripts and field notes were then reviewed two times as a data corpus. Notes were taken during these reviews and these notes were reviewed for preliminary themes. On the third review of the textual data, a codebook was started. The data were reviewed again and small amounts of textual data were coded. Codes were reviewed and then grouped into similar sets of codes. A digital codebook in excel was constructed with preliminary themes. These themes were then reinterpreted in light of the general basic theme and brought together into a global or broad theme. Mind maps were created to graphically display the themes and sort them into hierarchies and to ensure fluidity and interconnectivity of the network. Next, the coded data were reviewed looking for salient, significant and common themes. This re-reading of the texts in already coded segments allowed for the identification of underlying patterns that were not obvious during the initial reading of the texts (Stirling, 2001). Reducing the data again

into data sets that represent sets of significant themes then further refined these themes. Decisions about how themes will be grouped will be based on the available content and is described in the codebook.

The next step was to explore and describe the themes within the context of all the data. Principal themes and patterns that emerged formed the themes and sub-themes discussed in Chapter 5. A copy of the digital codebook was sent to my community liaison to validate the initial themes. The final step in the data analysis was to interpret the patterns in light of the original research questions, newly discovered and relevant literature and feedback from the liaisons.

Narratives and quotations are used to illustrate how the interpretations and themes were derived, unless the participant has requested that quotes from their interview are not used. However, participant reflections in their own words strengthen the validity of the data and allow the participants to understand how the themes have been generated while they review the data (Bird et al., 2009).

4.7 Data Return

A community report of the findings will be produced and provided to the community. The structure of this is yet to be determined. I hope to conduct a presentation/discussion to discuss the findings and potential uses of the study within the community.

5.0 Results

5.1 Introduction

Western and Indigenous management systems are grounded in beliefs about the way the world works and the roles and responsibilities of humans within the world (Lertzman, 2009). These beliefs are cultural, shared and monitored within the system. Identifying these beliefs and how they interact with local and traditional knowledge, practices and worldview has shed light on the interconnections between these components and form an important foundation for this research. Using the framework provided by Berkes (2017), the study objectives were to develop an understanding of how knowledge, beliefs and practices are interrelated in this resource management system and then how these interactions relate to conservation goals within Tombstone Park. To meet these research objectives, I was therefore not interested in *what* Tr'ondëk Hwëch'in know about caribou and the Tombstone area, but *how* they know caribou.

As mentioned in Chapter 4, I used semi-directed interviews and participant observation to collect data and thematic analysis to analyze written texts resulting from each interview. Five overarching themes were identified in the data and are further discussed in this Chapter.

Theme #1 - Four core beliefs within Tr'ondëk Hwëch'in worldview guide interactions with the natural world, including caribou: 1) nature is sacred and a gift; 2) all things are connected; 3) know your place in the universe and 4) nature has intrinsic balance.

Theme #2 - The relationship between humans and caribou is social and spiritual and based on respect and reciprocity.

Theme #3 -Traditional resource management strategies are rooted in worldview and guided by TEK acquired and maintained through observation, the sharing of stories and engagement with hunting practices on the land.

Theme #4 - Social systems that regulate and monitor resource use are entrenched in traditional laws and reinforce the relationship between people and animals.

Theme #5 - The Western park concept is both supportive of and problematic to the inclusion of local TRMS and the TEK it embodies.

The remainder of this Chapter is broken into five sections that expand on the themes above. The first two themes were found to be the foundations to the overall management system. This study found that in order to understand the management system related to caribou, one must first consider how Tr'ondëk Hwëch'in relates to and knows the natural world. Four core beliefs about the natural world were identified in this study as key to understanding this relationship between Tr'ondëk Hwëch'in and the natural world. These core beliefs are inherently integrated, but in order to discuss each belief (and in a Western, academic manner), they are discussed as separate entities in this thesis. The section that follows (5.2.1) builds on the discussion from the first theme to specifically discuss the relationship between caribou and Tr'ondëk Hwëch'in. Consideration of this relationship is essential to develop an understanding of hunting practices associated with caribou and thus the resource management system.

This study found that the management strategies are rooted in the worldviews discussed in Theme 1 and are guided by TEK. Therefore, it was important to develop an understanding of how this knowledge develops and is shared. Management strategies related to caribou specifically are then the next focus of Section 5.3.

The final section of this Chapter (5.6) presents data related to the second research question – how this TRMS operates and is expressed within the park and park management. Findings here include the point that the park is part of a much larger cultural landscape engrained with cultural connections, knowledge and experience. While there are several aspects of the park that make a significant contribution to new paradigms emerging in protected areas, the park concept also remains problematic to the goals of biocultural conservation. As Section 5.6 will show, the Western park concept presents barriers to a fulsome integration of traditional knowledge systems and may even impede continued traditional use.

5.2 Theme #1: Four core beliefs within the Tr'ondëk Hwëch'in worldview guide interactions with the natural world, including caribou: 1) nature is sacred and a gift; 2) all things are connected; 3) know your place in the universe and 4) nature has intrinsic balance.

Beliefs within the Tr'ondëk Hwëch'in worldview are part of the lived experience of the Tr'ondëk Hwëch'in; therefore, the results of this analysis were mainly derived from field notes taken during participant observation and time spent in the community and with community members. During this time, I noted important beliefs about the natural world that were continually referred to in one way or another. People often spoke of the importance of balance, humility, interconnection, and spirituality when discussing connections to the natural world. Analysis of transcripts let to further refinement of core beliefs within the worldview that guide interactions with the natural world. This study found that the relationship between people, caribou and land was framed by these four core beliefs. How the natural world works and human's place within this world was related to the following beliefs noted during the study:

1. **Nature is sacred and provided by the Creator**. The Creator created all parts of nature and proper respect to honour this gift must be shown. Humans have an obligation to care for and be stewards of these gifts. Humans are socially and spiritually connected to nature and thus have obligations to ensure it is cared for.
2. **All things are connected**. There is no firm delineation between physical and spiritual worlds, sentient and non-sentient beings and humans and animals within the Tr'ondëk Hwëch'in worldview. Humans are situated within nature and are connected to all things within it. Furthermore, all things are connected and in ways that humans cannot fully understand, in part because it was divinely created, and in part because humans are but one small part of an interconnected web of nature. Humans should care for and interact with the natural world with this connection in mind. Nature is made up of webs or networks of communities that rely on one another for survival and humans are part of this web. Furthermore, and important to this study, each animal community has a purpose in nature as do individual members within each animal community.
3. **Humans need to know their place in the universe**. Humans are part of the natural world and are a relatively small part in the universe. All things are equal and have equal importance. Within this 'equality among beings' humans shall remain humbly aware of their place in the universe. It is considered disrespectful to speak of, or make assumptions about, things one doesn't or can't understand.
4. **Nature has an intrinsic balance.** Humans shall remain humbly aware that they cannot understand nature's own balance. Interfering with natural process can disrupts this intrinsic balance and is considered disrespectful.

It is important to note that these are not the only beliefs that exist within Tr'ondëk Hwëch'in worldview and these are very brief and simplistic descriptions of a complex belief system beyond an etic ability to fully express the scope of the belief system. I have attempted to maintain some of the community terminology used to discuss these overarching beliefs, but this does not mean these terms or this categorization is meaningful to its members. Further, these beliefs are all linked and intertwined in complex and meaningful ways: I separated these beliefs during my analysis but as this Chapter will show, this is a forced separation. I focus on the beliefs that all things and connected and that nature has an intrinsic balance in the following section to briefly illustrate these connections and because these two beliefs are central to the following

discussion about how Tr'ondëk Hwëch'in relates to caribou and the management strategies that stem from this relationship.

5.2.1 Connections and Balance Within Nature

> [We] as humans are a part of the land as well, and … everything is connected. The land, the plants, the fish, the wildlife, the caribou. That, it's, like a holistic connection, and, without it, there's no, true balance. And so, without the caribou, without caribou…it contributes to a loss of, a part of our culture, a loss of part of our traditions, a loss of part of our lifestyle, so, it goes right into a loss of part of our spirit, which ties into our identity of feeling wholeness, and that full balance, so, with the loss of any part of what we rely on, it affects all of those areas in our lives. (P3)

All community participants made reference to connections: connections between knowledge and practice, practice and land, people and animals, land and community and spirituality. Usually the concept of balance was part of these discussions. Balance was referred to in "living a good life" and included acknowledgement how one is connected to nature and the community as the above excerpt suggests. A lack of separation between humans and nature encompasses every aspect of how Tr'ondëk Hwëch'in understands and relates to nature. A holistic view was often referenced to explain how people, animals, land are all connected to one another and seen as parts of the whole; one cannot be separated from the other or understood in isolation.

Balance was also referred to when discussing natural processes and how all things within the web of nature are connected. Natural processes within nature were described as products of nature (or the Creator) and if tampered with, the balance intrinsic in their creation could be compromised. This belief was most evident when people referred to Western scientific strategies involved in natural resource management, such as the complete restriction on cow caribou hunting to increase herd numbers, the wolf control

program, and stocking creeks with fry to increase fish stocks. People referred to these strategies as a sign of disrespect toward animals, or "bothering" or "playing" with them, but as following sections will further illustrate, this is also considered an interference with natural processes that are considered essential to healthy and sustainable animal populations.

> [B]asically from a First Nations perspective, and the Elders, like, even for fisheries or something like that, test fisheries and stuff that they do, First Nations, from what I've been taught, we don't play with animals. We don't go and net them, put collars on them, or do the test fisheries for salmon. We just leave them alone; let them do their thing. (P11)

An interference with animals is considered very disrespectful and a lack of respect for what has been created. The spiritual obligation to care for nature (including animals) was found to require a deep understanding about these connections and importantly how to maintain the natural balance within these processes. Also important was the belief that all things within this web are believed to have a purpose, a reason for being that humans cannot fully understand. Humans as part of this web, not outside of it, not above it, are not believed to be in a position to make assumptions about why nature does what it does.

> [W]e try to be God. We try to do his work. He put us on this earth to look after them (animals)…it's up to them (animals) how they control it. Not us. (P2a)
>
> You can't fool around with nature, that's the way it was. And, we're the only ones that obey what we were told to do, eh? (P2a)

As will be shown throughout this Chapter, these beliefs guide all aspects of the management system. I now turn to how these beliefs inform important values attached to the relationship people have with caribou.

5.3 Theme #2: The relationship between humans and caribou is social and spiritual and based on respect and reciprocity.

During my time spent at First Hunt and other culture camps talking to people, participating in hunting and other activities, and helping around camp, respect was consistently referred to and/or shown. Respect for animals was talked about directly, referred to in stories, and demonstrated through rituals before, during and after harvesting. I learned early that respectful behavior toward animals was essential for the continuation of "good relations" between humans and animals. "You've got to pay respect to caribou because…they just walk up to you to…give themselves to you."(P8) I also learned that caribou were considered teachers as well as friends.

> You know, it's, it's kind of interesting that you know, the humans are always trying to control what's out there. When really, they're [animals] in control of their own lives and they're teaching us, you know, so it's important to open up and recognize those signs that a lot of the teachings actually come from those animals, that's not us like saying, "Oh, I know this because"…it's the teaching, it's the other way around. The animals teach you a lot, so yeah. So it's important to see that. (P15)

The sacredness of nature was talked about in relation to the obligation to look after animals. Humans and animals, both created by the Creator, are bound together spiritually. Humans have a responsibility to care for animals in this view but caring for them includes respecting them as sentient beings intelligent enough to manage themselves. Throughout this research I was consistently told that you can't manage animals: you manage humans. One community member explains: "Elders told me, leave the animals alone, let them manage themselves." (P11)

When I asked how caribou take care of people one Elder replied; "[w]ell, like, like I say, if you have common sense, if you need it, he's there because he's our friend." (P2b) You are to treat animals as you would a friend. The connection to caribou is social and

reciprocal: "…if we treat them good, they treat us good when we need it." (P2b) With this same Elder, my inquiry into the relationship between humans and animals always resulted in the retelling of parts of a traveler story. Stories of The Traveler occur throughout the Yukon in different forms where he has different names. These stories occur throughout Athapaskan culture and refer to the hero who helped transform the world into what it is today. Parts of the stories that I was told always focused on a time when animals were too big and killing humans. The hero talked to the animals and the way it was described to me, he negotiated with them to stay small, or the size of their babies, and to not harm humans but live with them. These important stories reference the agreement and cooperation that took place long ago between humans and animals and how the resulting relationship is reciprocal and must be respected in all interactions.

Animals are given characteristics similar to humans, including the notion that animals are sentient beings with agency and their own communities and families and like humans, live by their own codes: "Well, animal got their -- like I'd say their commandment. So they live by that. And that never change[s]." (P2b) This commandment is believed to guide animals in their behavior and while it cannot be fully understood by humans, it is to be respected and acknowledged in stewardship practices. Practices that adhere to animal "codes" and displays of respect and reciprocity are further discussed in the next section.

In summary, this study found that how Tr'ondëk Hwëch'in understand and know the natural world guides their interactions with it. Core beliefs relevant to this study included the sacredness of nature, the interconnection of all things, the importance of humility, or knowing your place, and the balance within nature and across connected

relationships in nature. These beliefs along with important values of respect and reciprocity were found to inform the relationship people have with caribou. Caribou are considered friends and teachers – they help when people are in need by giving themselves to people and they teach people how to interact with them. A display of respect is essential to maintain good relations between animals and humans in part because this relationship was negotiated in good faith a long time ago and agreed upon by both parties. These beliefs are central to the strategies Tr'ondëk Hwëch'in employs in natural resource management and central to how knowledge is acquired; the focus of the next section.

5.4 Theme #3:Traditional resource management strategies are rooted in worldview and guided by traditional environmental knowledge acquired and maintained through observation, the sharing of stories and engagement with hunting practices on the land.

The third theme identified is that traditional resource management strategies are rooted in worldview and guided by traditional environmental knowledge that is acquired and maintained through observation, the sharing of stories and engagement with hunting practices on the land. The next two sections describe this theme. First, a discussion of how knowledge is acquired and transmitted is presented, followed by a discussion about the traditional management strategies for caribou that were identified in this study.

5.4.1 Traditional Ecological Knowledge and Learning within Theme #3

Numerous seasonal culture camps are organized by Tr'ondëk Hwëch'in Heritage Department and present opportunities for citizens and community members to come together to practice and teach cultural traditions. They are opportunities for learning in culturally appropriate ways and in culturally appropriate settings: on the land with Elders,

family and community. They were also opportunities for me to learn how knowledge is gained, transmitted and shared. At one hide tanning camp I was struck by the differences between how I've been taught a skill in my Euro-Canadian family and the Western education system and how hide tanning was taught. I understood on a theoretical level that traditional knowledge was experiential but I didn't know what this meant in reality. At this camp I was very nervous to try my hand at scraping the meat from the hide for fear of cutting a hole in someone else's hide. I felt that because no formal instructions were provided to me - hold the knife this way, scrape it this way - I was not ready to jump in and try it myself. So I observed for the first day, never picking up a knife. On the second day as I was observing and chatting with an Elder who was scrapping a hide, she asked if I was going to try. After I provided a non-committal answer she said, "I learned because I tried". The process of learning by doing was introduced to me that day and was reinforced throughout my participation in culture camps and through interviews. In one interview it was explained through a story:

> This old lady, I forgot her name, but she tell her granddaughter, 'people come, so, you make tea'…And then she talked to the other Elder, 'I just wanna see how she gonna make tea', she said, and I guess, she didn't explain to her how to make tea or anything, you know, and anyway, the girl get it, and it wasn't right. So she [the Elder] said, 'you go back, make it right this time'. And the girl asked her, 'Grandma, what do you mean make it right, or, not right, make it good?' And her Grandma explained to her, 'you gotta boil the water, and don't get burned, and make sure you boil water good, and you put your teabag, or loose tea at that time, in the pot, and then you pour hot water over it, and let it sit for awhile. And see how many people here, you bring the pot back, and people can have tea'. You see, they were teaching one another, eh? (P16)

Elders were and still are the main teachers, of skills and values. This teaching was primarily done, and is still done while doing.

> [T]hey help one another, and they were teaching the young people at the time, when they go hunting, they bring moose, or caribou, or whatever back, and the man prepare everything, and the woman after that, they bring all the meat back, the women all get together, they sit there, and they cut meat for drying. (P16)
>
> I think it's, good living, like, you know what I mean, they dry the meat in the wintertime…and then the summer come, or spring come…they go fishing, they dry fish, whatever, arctic char, or salmon, go up Klondike, so they get that too, and then they get grayling, and then they…they dry it or whatever, so, but, anyway…the main part is, in life there then…I think they were trying to teach their kids how to do different things, you know, how to trap, how to fish, or how to do things at home. (P16)

In the past, cooperation between members and between neighbouring groups would have been essential to the survival of the group and the knowledge that was passed on remained relevant to each situation encountered during the seasonal round, making it both relevant and practical. Knowledge of what to do, who does what, and how to do it, was taught and reinforced through hands-on participation in practices associated with everyday necessities of life. Patiently gaining knowledge through your personal experience, observing how things are done and trying your hand at it seemed to be the proper way to learn. However, it became apparent that while doing and observing were important, the importance of listening could not be understated.

I was told on more than one occasion that traditional knowledge takes a lifetime to gain and you need to listen or it will be lost. "[T]raditional knowledge is just like, just like a big storybook that's being told to you from childhood. If you don't listen to it, you don't look out…it's going to be lost from you." (P8) Elders that were raised in the residential school system spoke of their disconnection from learning on the land and made sure to let me know when they had no personal experience to answer a question. I often heard the phrase "I don't know but I've been told". I found one aspect of storytelling to be that it passes on knowledge that you yourself have not been able to gain

through direct experience. I also found that every community member referred to stories they have been told when asked how they first came to know the Tombstone area. Their connection to place was most often explained through stories and oral family histories. Many Elders also spoke of the importance of returning to areas not only where you had been hunting, gathering or traveling, but also to places where the stories that have been passed to you are rooted. As one Elder put it, "how nice to be stepping in my mom's footstep…so if I'm walking around there, I just feel really good, the first time when I came, I kinda didn't know the country, and, like, I didn't enjoy the ride down until my mom, said, told me a little bit about it." (P1).

Western education systems have significantly impacted the Tr'ondëk Hwëch'in community and their ability to learn on the land. However, knowledge continues to be produced and shared on the land, as a community, for the community and culture camps help to ensure culturally relevant teachings and learning continues. The camps' main focus is on the exchange of knowledge and values between Elders and youth, but also between all members of the community, including many non-First Nation community members. Of particular relevance for this study is an annual caribou hunting camp called First Hunt. The First Hunt camp is located north of the park with hunting often occurring within the park itself.

> [T]hey ended up calling it First Hunt, and the reason being is that they wanted to revitalize some of the traditions based around a young person going out for their first hunt and you know, there's many instances of this and it's like a -- it's a right of passage for young people. And, you know, traditionally…this was the right of passage for young boys. They acquired their skills from family members, mainly their uncles, traditionally it would be their uncles and their father, to be able to learn all the skills needed to be able to be a good hunter. Re-building that connection to the land and being out there and knowing that the land is a way that could

> help them learn what they need to know to carry out their life or -- or learn what they need to be able to be a good hunter. (P15)

The camp provides opportunities to learn traditional values while engaged in traditional hunting practice. "[T]he camp is really about…teaching – teaching as their doing." (P15). Importantly, the camp transmits Tr'ondëk Hwëch'in knowledge, beliefs and values about caribou and the natural world through hunting practice.

> [It] really comes down to, like, talking about the basic values, you know, of respect and balance and harmony and you know, all of those things that you want young people to come away with, you know? Humility… that really forms some of the basis for getting them to see that, you know, opening up their eyes to what's around them. (P15)

The teaching of values and beliefs at culture camps is an example of how knowledge acquisition has changed through time but has retained important components. Here youth learn how to hunt through stories and practice while engaged on the land. They also learn the importance of observation.

Learning through observation provides opportunities to learn and also teaches one how to observe the interactions between animals and humans and the environment. These observations were noted at temporal and regional scales and included practices that ensure humans are paying attention to all aspects: animal health, environmental change and climate changes. Observation was done with practices that show respect for the animal so the reciprocal relationship can continue.

> [Y]ou gotta look at it in the holistic view, that's what management is, that's how the Elders, when they speak, they can't say it in, you know, a couple of words. Like, it's bigger than…that, spiritually, it's respecting that animal spiritually, it's physically, so you use everything, because you're analyzing everything. You're wondering, is the…hoof…lower than normal, is it because they changed their route, it's it because more rocks…is it too much rain, is it drying out, [are] there more forest fires happening, you know? Everything is put into cutting up and butchering

> that animal, and respecting that all the way along, so, that's physically, mentally, is there something wrong with the insides, the biology of what is happening with the heart? Did we kill it too early, did we kill it too late? The liver is white, is there tics now? [A]re they starving themselves to death? What is happening there? Too many, is it a long winter… you know? How many calves are out there? Then they're looking at the land…[are] there less calves, [are] there more bull moose, you know, stuff like that. That's where that management and year-round looking at it, not just, ok, let's do a study and research it this fall for two months and figure it out, you know? It takes years, years, to manage something like that, and it should be more valued…because we are out on the land, we are managing it already. Even though, you know, I don't have a degree, and, conservation, or whatever, you know, I, my whole family does that. (P16)

In summary, humans and animals are deeply connected in Tr'ondëk Hwëch'in worldview and the relationship is social, spiritual and reciprocal: they care for one another. These beliefs form the foundation for how people understand, gain knowledge of, and interact with the natural world. The environmental knowledge acquired through practice, stories and observations are also applied to strategies in the TRMS. This knowledge includes practical knowledge of hunting and hunting technology, knowledge of values and beliefs attached to animals and to nature, and the importance of observation in gaining and tracking environmental knowledge. Beliefs about the natural world and the relationship people have with animals are rooted in this knowledge system and thus the management strategies that stem from it. The next section discusses aspects of the management system that were identified during this study and how these are interrelated to TEK and worldview.

5.4.2 Traditional Resource Management Strategies within Theme #3

> [M]anagement of this land, we careful with our sheep, we careful with our moose, so, we, use caribou long time ago, and then, I go around…find lots of caribou, maybe, take so much, like a store, take so much, leave it, and then follow caribou around, spring, they come back here, June, so you don't just rotate [caribou also rotate], and that's how they manage our land. And then, they watch, the caribou, water…(P2a)

Environmental knowledge gained through interactions with the natural world is applied to the resource management system in complex ways. As noted in section 5.3, the notion of "management" does not translate to how Tr'ondëk Hwëch'in interacts with and takes care of caribou. Because the purpose of this paper is to explore TRMS, I will maintain the use of this term with the understanding that this term is not culturally appropriate to Tr'ondëk Hwëch'in but considered necessary within the context of this thesis. It is therefore important to refer back to the definition of a resource management system used in this thesis to further this discussion.

Traditional resource management has been defined as "the application of traditional ecological knowledge (TEK) to maintain or enhance the productivity, diversity, availability, or other desired qualities of natural resources or ecosystems" (Lepofsky, 2009: 61). Management systems have been defined as "a diverse array of formal and informal social constraints on how people interact with resources and ecosystems, on the distribution of rights to access and responsibilities for stewardship". (Lertzman, 2009: 342). Like Lertzman, this thesis makes no assumptions about the outcomes, positive or negative, resulting from this management.

The ways in which Tr'ondëk Hwëch'in knowledge and beliefs interact with the management systems is far more complex and diverse than the scope of this study. However, this study found that extensive environmental knowledge about the functional relationships between species and within the species populations was applied to strategies within the system that maintain natural process, or ecological interactions within nature and between key species. Harvesting strategies that respect these connections, without interference, are considered important to the maintenance of healthy and therefore

sustainable populations. The way Tr'ondëk Hwëch'in relate to and understand nature was found to underpin these strategies. That is, the notions that nature is divinely created with balance in mind, that humans are part of the web of interconnections that make up nature and that all things are connected in ways that humans cannot fully understand guide the management system toward maintenance of natural order, or natural process without interference in natural processes like reproduction and migration.

The strategies of the management system that emerged from this data, or the sub-themes, included: a) maintenance of important predator/prey relationships that help the herd; b) hunting restrictions on animals that contribute to the maintenance of natural processes; c) selecting the right animal for your needs; and d) shifting harvest areas or your resource focus. It is from these sub-themes that management strategies to enhance or maintain the sustainability of resources were identified in this study. The following subsections present these findings in more detail and consider how they might contribute to the enhancement and/or sustainability of resources.

a) Maintenance of Important Predator/Prey Relationships

Throughout this study, insights into the TRMS and strategies were revealed when juxtaposed against Western management strategies. One of the more prevalent examples was the wolf control program in the Yukon during the 1980's. The wolf control program was a Yukon Government program that reduced the amount of wolves in an attempt to rebound declining caribou numbers. In Tr'ondëk Hwëch'in knowledge, wolves prey on caribou and cull the sick and weak out of the herd. When wolves hunt caribou, it involves a chase that makes caribou "sweat" and keeps them healthy. "He [wolf] keep them moving, keep them healthy, and they take the weak one, so, he's sort of like a

doctor." (P2a) The natural balance between these animal communities was disrupted when mature wolves were killed during the program. Community members spoke about how this program had little regard for the interplay between wolves and caribou and the important role wolves have in herd maintenance.

Importantly, because mature wolves were killed, it was said that the young ones were left without guidance on how to be a wolf. "[T]he trainer of the wolf is an Elder…train his young people, know what to do, all that's gone." (P2a). While there was no mention of Tr'ondëk Hwëch'in hunting wolves, the important role the wolf has within caribou herds was mentioned several times. Disruption in the wolf/caribou relationship during the wolf control program was believed to result in unhealthy caribou populations.

> The wolf used to look after caribou. When I was talking to, what you call, congress? Like, territorial council? When I talk to them, I told them, I say, you gotta stop shooting the trainer of the caribou. The wolf, the trainer, is gonna be the mother, eh? You see that truck – danger - they [mother] teach them all that, and they teach them how to control caribou. Now, they're not trained. They're not trained to be afraid, they're not afraid of danger, they go right into…if they have to, because they don't know danger. And the caribou, they [wolf] just go there, kill them. They don't chase them. The reason for chasing caribou, that's so caribou could sweat, so they keep healthy. And the weak ones, they [wolf] take it, keep the animal…healthy. (P2b)
>
> They figure if they're going to kill all the wolves off, then caribou be healthy. Caribou wouldn't be healthy. Because…if caribou get sick, well…who's going to look after them? (P8)
>
> It's not the wolves that are killing the caribou. It's the two-legged wolves. (P8)

The wolf kill program ran counter to the notion that wolves and caribou are intrinsically linked and that each relies on the other to maintain healthy, sustainable populations. It also ran counter to the notion that the predator/prey relationship serves a purpose – to keep the herd healthy. It is also noted that the 'trainer' referred to above is an Elder, an

example of how wolves, like humans, have important social networks that should be maintained in order for them to continue their role in herd maintenance.

Like the wolf, human harvesting was also described as enhancing (or helping) caribou herds. Humans as part of the community of beings are obligated to help caribou and not taking an animal that presents itself to you is disrespectful. Not hunting caribou is also considered to have a negative effect on their need to reproduce. "If you don't kill it, they decrease. If you kill it, they increase." (P2) This was specific to caribou and did not necessarily apply to other animals like moose. The following quotes refer to the notion that caribou harvest maintains pressure on the population to reproduce. Importantly, it was stressed that this only works when done with the proper care.

> [I]t's kind of interesting that you only take what you need, but then at the same token, there's also this value about you know, we've -- you know, we want to help these animals out or we want to do what we can to continue to -- for their lives to be able to grow, like so we've got to hunt those animals to be able to -- we've got to keep hunting those animals and that's part of our aboriginal right as people. We've got to keep hunting those animals too, because that's also going to bring about the -- keep their health at a level that needs to be -- to sustain the population. (P15)

> And I tried telling [the natural resource board], the resource, the more you use, the more it increase. You don't use it, it decrease[s]. But they think can't be true, but you use your common sense. They say if you don't use it, then it increase. Increase? There'll be no land for them to eat. But, I tell that, because they gotta have, like, we got grocery store, we can go, don't buy they throw it away, right? But if we can buy, they keep coming. Same as that. So, they [caribou] had to watch their food, too, you know. So, that's how, and then, before the white people come in this country, we have to be very careful how we manage the land, we just don't go and slaughter everything. We want to have caribou fence, drive them in there, shut the gate. Then they shoot what they want, not shoot, or, when there's enough, let them, open the gate. (P2)

> [T]he more caribou you kill the more it increase fast. And, then, if you don't kill them, why it increase? No use. So, they gotta protect their food too. Why they eat everything, if it increase, [there will] be nothing to eat. (P2)

Sustainability of the herd therefore requires extensive and complex knowledge of herd dynamics, migration patterns and the interplay between the herd and humans and the herd and other predators. One of the quotes above also refers to the use of caribou fences in the past as a technique to ensure you only take what was needed and leave the rest, a point that will be followed up on in Chapter 7. Sustaining healthy caribou populations was also achieved by restricting the harvesting of key age classes of animals that contribute to reproduction and in the case of caribou, animals that contribute to successful migration.

b) Restrictions on Harvesting Animals That Contribute to Reproduction or Migration

Restricting the harvest of certain animals at certain times of year was identified as an important strategy in the management system. This strategy includes restrictions on animals that contribute to reproduction and migration.

> [I]t's also important to know that when you hunt for the animals, not to take the leaders of the animals. Not to just go out and start to hunt right away, you go out and observe those animals first and find out which one you think might be the leader. You don't take the leader. Sometimes the leader could have the biggest antlers. And so there's always this thing about having to hunt the biggest antlers and it's not about that. You have to let your leaders pass because they're the ones who are the trainers. They teach the young people. They teach their own herd. They teach and it's the same thing -- it's the same for anything, you want to be able to have your elders present because they're the leaders of your community --and it's important to keep those in connection with how you're -- you -- you keep those values in mind when you're out hunting your caribou. (P15)

As the quote above illustrates, leaving the leaders is akin to leaving the wolf "trainers" who impart important teachings and knowledge to other members. Hunting restrictions on reproductive age classes of animals was also mentioned when discussing caribou, moose and fish.

> When you see big, big rack, don't bother it because that's your breeding stock. Get a small rack. [Y]ou're out here to hunt for your, fill your deep freezer, you're not out here to hunt for horn. (P8)

> That day, we got big fish, I hold it up like that, "Dump it," he told me, I said, "No, no, this one's got to go." So he get back at me. So that's one they talk about, that's -- one that's going to give you more fish, if you let those small ones go like that, they give you nothing. Those big ones -- that's the one. That's the breeding stock. (P8)

> Well, you see, one bull, breed 38 cow[s], and, if the creator want you to shoot, kill the bull, he wouldn't make it the way it is. (P2)

> Mom and Dad…they tell me the only time you shoot [pregnant] cow is when you've got nothing. When you've got nothing on the table. (P9)

In summary, key strategies noted during participant observation and within interviews include restricting harvest on caribou leaders, or trainers in the herd, and restricted harvest of animals that contribute significantly to the gene pool (i.e., big bulls and big fish). This includes restricted harvest of pregnant cows, or rabbits in the spring and careful consideration when hunting cows.

c) Selection of Animals for Subsistence

Selecting the right animal for harvest was referred to when discussing seasonal restrictions on big bulls in rut. Yukon Government regulations for non-First Nations restrict all cow hunting but the season for non-First Nations coincides with rutting season. Hunting bulls in rut does not match Tr'ondëk Hwëch'in hunting practices that restrict the harvest of mature bulls during the rut. The following quotes refer to this more recent Western management strategy enacted in an effort to maintain cow numbers.

> [Only taking the bull], that's the stupidest thing that I ever run across, all the years I been on the caribou management board. And, why, that is good? You can't tell how they learn [that], they only go by what they learn in university…what they read, but they don't know how to explain it. (P2)

> [I]t's important to know, "Alright, is this a young bull or is this an older bull?" Let the older bulls go. Because they are -- they're the ones who've been around, they know -- they know how to -- they know how -- you know, that they are the ones that mate the most with the females so they're providing good genes and carrying on a good way of -- of living and teaching others. You have to think about those animals, get the young bull that's going to provide good meat. And young animals have good meat on them and good -- and if they have had a healthy season, then they have a good amount of fat that's going to provide a lot of good nutrients. (P15)

> [Tr'ondëk Hwëch'in citizens] take…bulls, cows, just the government that, I guess, they don't understand the rutting season. Like the rutting season should be shut down complete -- completely, just bring your camera. (P8)

Another Elder mentioned that the use of caribou fences in the past allowed people to select certain animals they wanted, namely ones with good meat and good hides.

> What they do when you talk about things, they gather all this stump, make it round, all round, and then they make mark, where the caribou go in, and then they just get maybe one or two, and that's it, then they let the caribou go. They don't shoot 'em all, they just pick out which one they want. (P16)

Animals that provide good meat and hide without interfering in the ability of the population to maintain its own gene pool were preferred. However, while there was a preference to restrict certain animals and at certain times of the year, it was also mentioned many times that if you need it, you can take it provided you don't take too much. The principle of taking what you need was illustrated in stories about hunting pregnant cows when an Elder requested it.

> [W]e can take a lot - all the caribou we want, could take all the moose, we could kill cows, but we don't bother cows, you know? Me, I shoot cow caribou – fat [pregnant]. Because my mom and dad wanted it so I shoot them and the game warden say, "You're not supposed to shoot those little ones." "Well, you tell my Dad about that, Mom and Dad, yeah, they tell me to get it, I'll get it for them." That's just life, eh? Sometimes, sometimes we would shoot cow with a baby inside --and they'd give it to mom and dad, yeah, they liked that -- they liked that calf inside, it's soft, eh? All that good stuff in there, eh? (P9)

This quote alludes to the idea that Elders may request an inutero calf for its nutrient content. In another interview where the participant did not want to be recorded, I was told a story where his Grandmother reminded him how you could die if you don't take an animal when you need it. In the north where the main source of food is from meat, complete restrictions on hunting are not always possible, or advisable. Another Elder echoed this same sentiment, "at that time, they didn't have welfare, you know, you can't go on welfare or whatever, not that time." (P16) While there is a preference for immature bulls before the rut this was not described as a complete restriction but a practice of taking what you need.

> They wouldn't -- they wouldn't bother a pregnant cow. A dry cow, if nothing, if no bull around, nothing, they would shoot that dry cow, eh? If there's no bull around, still shoot the cow.
> What if a bull was around?
> They would shoot the bull. (P9)
>
> We don't get a whole bunch, we just get maybe one, or get one for some [other] family. (P16)
>
> You take it if you need it, but you don't use it as an everyday hunting ground. (P8)

Taking what you need but selecting the right animal for your needs appeared to be a common strategy. In the north where food security was never a guarantee, this strategy makes good survival sense. The final quote above also alludes to the practice of limiting the overuse of an area. This strategy was echoed by another Elder who spoke of the teachings he received from his parents to shift to other resources when in need. "They said there's rabbits out there, there's other things out there, you see? So I do that. I set snare. Always fish around some…rivers." (P9) Resource shifting appeared as another harvesting strategy to sustain resources, but one that limits resource depletion.

d) Resource Shifting and Monitoring

During this research, it became apparent that the seasonal round described in Chapter 3 included strategies to ensure areas are not over-hunted or over-foraged. Or to use a common expression, to not "eat yourself out of house and home". Humans and animals were both noted as practicing resource shifting.

> [T]hey [caribou] just don't go one place and eat the land, because moss take 80 years to grow, so, they have to keep so much. (P2)

Knowledge of temporal cycles, like the 80 year cycle for caribou noted above, is another example of how the resource management is tied to natural cycles observed within and across animal populations and in animal behavior.

> Then you've got to figure out what these old people were talking about. If you don't use…traditional knowledge…you're not going to get anywhere, like for your resource, for your wildlife, your fish. Fish comes from cycles, like so many years, they are gone then they come back. I remember reading an article on the Chief Isaac when I was working at the check station in 1926, it was a low number in salmon, there was low number in caribou. So…Chief Isaac told his people, "You go fish, but don't catch more than what you need. And when you go hunt caribou, you take what you need, don't overkill." (P8)

Knowledge of animal cycles speaks to the ability of TEK to remain adaptive as it takes in new knowledge and applies it to resource strategies. For example, the Tr'ondëk Hwëch'in lands and resources department today monitors population declines using a blend of TK and Western science but will voluntarily limit harvesting within the community.

> Basically, to us it means that if a species is experiencing declining populations, then, we have that ability to limit our harvesting. So, we will work with, the other governments to develop a management plan, a harvest management plan, and in terms of the harvest management plan. [F]or example, the Fortymile caribou, we volunteer not to harvest it. (P3)

When populations don't rebound according to natural cyclical fluctuations traditional knowledge is used to figure out the new starting point.

> Just keeps going down, down, down [population numbers]. So, that's why…like I said, we've got to go back from back here [new baseline]…then you've got to work with that. If you don't work with your traditional way, well, you're not going to get anywhere. (P8)

Using a "new baseline" for resource decisions is grounded in traditional knowledge, beliefs and teachings. It was explained to me that in the past, the Chief would meet with neighbouring groups in the spring and one of the items to discuss would be what people had learned and observed over past year and the upcoming year so that decisions about where families would focus their hunting and gathering efforts could be made.

> But, they leave, they take both, but not to kill, hunt the caribou. So, they take not, not too much. They say, Chief won't like you, you took his bunch of Klondike, eh? Get, another guy, he took his bunch upriver, another guy who go, take from the earth so they had to find it. If they all go together, they eat the whole country, eh? So, that's how he work it, eh?
> And the Chief decides that?
> Yeah. Chief is everything, should, Chief is a judge, too, tough one. You go before Chief, judge, you never do it again. (P2)

In summary, the management strategies include the maintenance of important predator/prey relationships that help the herd, hunting restrictions for animals that contribute to natural processes like reproduction or migration, selecting the right animal for your needs and shifting harvest areas or your resource focus. All of these strategies are used to maintain healthy and productive caribou herds. These strategies only work with cooperative efforts whereby all members are adhering to the same principles. Adherences to these strategies were found to be normalized through social systems that reinforce beliefs and values entrenched in the management system and that is the focus of the next section.

5.5 Theme #4: Social systems that regulate and monitor resource use are entrenched in traditional laws and reinforce the relationship between people and animals.

The fourth theme identified in this study was social systems that regulate and monitor resource use are entrenched in traditional laws and reinforce the relationship between people and animals. It needs to be noted that strategies described above are also guided by traditional law. These laws guide members to live a proper life and are thus much broader than described here. However, for purposes of this thesis, these laws were found to reinforce the connection people have to the animals they harvest and the reciprocal nature of the exchange between the hunter and the animal but also reinforced the management strategies for sustainable resources.

5.5.1 Traditional Laws in Resource Management

Conduct in harvesting that demonstrates respect for caribou, and the Creator who provided them, in all acts of hunting (prior to, during and after) was found embedded in traditional laws. These laws reinforce the proper way to hunt and the proper way to ensure the relationship continues. If these laws are broken, the exchange becomes compromised.

> I've seen wrong ways to hunt, and I've seen proper ways, and just, I respect animals, so I go out and I hunt and I make sure I've got a good shot, try not to miss, wound, you know? (P11)

More specific rules for use within traditional laws are locally known as Dä̀'òle`.

> In Han, we say it dow-lae [phonetic]. In Tutchone they say doo-lee [phonetic]. And, Gwich'in say da-o-lae [phonetic]. All word[s], just about the same. (P2)

Breaking these rules is believed to bring bad luck to the hunter, preventing them from future hunting success and can even bring about the complete disappearance of animals.

This belief is tied to the conviction that offending animals breaks the mutual agreement and the animals will no longer show themselves or agree to be hunted. Respect is central to Dä̀'òle` and the luck associated with it was considered to come from a higher power.

> I don't know how [this] happen. But, if you get back luck, they come, Dä̀'òle`, think it's something you did, and you can't kill nothing. (P2)
>
> But, the elder told me, all that power is gone, eh? Because, after they stock it [stock creeks with fry]…that power… given from a higher power. So, he said, once they started harm one another, it was taken away. (P2)

There is also a social consequence for breaking rules and laws and it was noted that in the past you would be judged and sentenced by the Chief. "Now, if you break a law, the Chief…the judge [for] everything…. They send [you] up two year, or six months, there, you go [whatever your punishment]. (P2) Today, there are still consequences for breaking these laws and breaking them shows disrespect.

> [I]f people break that traditional law, what happens is that, they have to wear that, they have to wear that…and it's not something that's, like…getting a fine, paying it, and that's it. It's like, you wear it as long as, it might take a while to be rid of. [A]t the same time [as it's] on your conscience, you're also aware that the rest of the community is aware of what you did. (P3)
>
> [Y]ou make that decision together [what the "rules" are], as a community, and then…it becomes like a traditional law, and you follow it, and when people don't, then, it's disrespectful, being disrespectful…to the community law. (P3)

The belief that animals will "go away" if disrespected was described to me in various ways but perhaps most profoundly through stories. An Elder began one story by telling me it was a "funny story". I expected "funny" to refer to humour. The story was about a time of starvation, where a shaman, who was a protector of caribou and could make the caribou come and help people, marked a caribou's tail with ochre in a dream. He told the people not to touch this caribou but they didn't listen, and as a result the

caribou disappeared. The Elder ended this story with "…that's why, they're so careful, how they manage." (P2b). When I couldn't see what was "funny" about the story he replied "…you gotta be careful what you're doing. Kill that caribou that's not supposed to be touch, therefore it's gone." (P2b) Much later I asked my community liaison how this was a funny story and she said he likely meant funny as in I would think it peculiar, not funny as in humorous. It was also made clear to me that this was a Boy in the Moon story that features prominently in local myth and legend. Clearly the story was lost on me at the time, as the Elder suspected, but I did learn there are significant consequences for breaking traditional laws and not showing proper respect for caribou. Specific hunting practices that demonstrate respect are discussed next.

5.5.2 Proper Ways to Show Respect for Caribou

Throughout my research, I was told of many ways to show proper respect to caribou to ensure continued hunting success. One thing every community member told me was to always say Mahsi Cho (thank you), even in your head as a prayer. You are thanking the animal for giving its life and thanking the Creator for this gift. This embodies both respect and reciprocity. If you show proper respect, the animals will continue to give themselves.

> Yeah, yeah, all the time we say that [mahsi – thank you]. So, it's so, one day, down the road, there's gonna be nothing. That's what we were taught. And it's starting now, I guess, eh? (P1)

> You have to thank the, whoever, the creator, or whatever, and you thank them for taking that item out of the ground, or whatever you take out of this world, you know, fish, and moose or whatever they talk to [it], maybe dead moose, they [say] thank you. (P16)

When a caribou is killed, one must first take off the head and place it away from the body, facing the opposite direction. When I asked one Elder about why this was done the reply was, “how would you like somebody cut your neck off and carve you up and you're looking at them? Hmm?” (P8) The spirit of the animal is believed to still be with the animal and out of respect you do not make it watch itself being butchered. The kill site is to be kept clean, minimizing the amount of blood around the site. “But everything is clean…because, if it sink into ground, it gonna smell”. (P2) Tracking blood around the site is highly discouraged. One Elder explained that traditionally animals were butchered on willows so the blood would not seep into the ground. The kill site is cleaned with no gut piles left behind, except for pieces that are left as gifts to smaller animals. During my experience on a caribou hunt, a piece of caribou was left in a tree for the ravens. This act shows respect for all animals that are part of the environment and the obligation to help one another.

One is to never make fun of animals, under any circumstance, hunting or not. You treat animals like you treat your friends; you don’t laugh at them, ridicule them, play with any animal parts or touch animals unnecessarily.

> And when you kill a caribou, you're not supposed to make fun of it, you're not supposed to laugh at it. It's about treating it with -- with respect. That's the way the old people do it years ago and carries on. It was taught…with your culture. (P8)

Hunting tools are also respected. One does not leave them lying around and if they are on the ground they are not to be stepped over.

> Most important thing, too, is, if a guy put his coat down…or his hat, or gun, or whatever clothes he got, you never step over… whatever they own. Cause bad luck, they say. So, you have to respect that hat or coat or whatever too. (P16)

Important rules-of-use after the hunt is not to waste any part of the animal and to share the meat with your community.

> [I]f you give your first caribou away, then, then it will give you the, I think it's believed…we would always have the luck of being a good hunter. (P3)
>
> You're going to go hunt, you make sure you eat that -- what you kill. You don't just kill for nothing. (P8)
>
> You know, people make a lot of stuff out of it, they…tan the hide, and sleep on it in the winter, they call it mattress. They make, babeesh out of it, for their snowshoe, you know, stuff like that, and bone, they use it for scraping their skin. I guess they use everything. You know, nothing go to waste. (P16)
>
> [Y]ou know, all of those things came from the caribou, you know, so it was important to best utilize…what came from the caribou and really, it was also recognition and respect to that animal that you were using all those things in an appropriate fashion -- so those are kind of skills that you know…it doesn't happen necessarily today, but it's important to…keep those things in mind when you're working on a caribou. (P15)

As this Elder explains, the need to eat all parts of the animal also has a nutritional purpose.

> So, they keep them [miners], alive but the Indian tell them, don't eat straight meat because there's nothing in meat. Fat, crisp, everything on it. That's where the vitamin is. (P2)

Respect for animals also includes respect for the land and ensuring important habitats are maintained.

5.5.3 Proper Ways to Show Respect for the Land

There were many references throughout this research to the importance of "keeping it clean". This usually referred to keeping your camp clean as to not attract other animals as above (e.g., gut piles, etc.); but it also referred to keeping the land clean. This is linked to an obligation to be stewards of all that has been created but it is also an

obligation to ensure the environment can support all living things. Keeping the land clean is considered respectful and an acknowledgment of the reciprocal relationship between humans, animals and the environment.

> Well, they always said to respect your land, and keep it clean, and, well, that's what I think, me, now you guys are coming in, and you're gonna damage, and you're gonna get the money, and away you go. But, they kept their land clean. They lived up here for thousands of years, I guess, generations back. (P1)

5.6 Theme #5: The Western park concept is both supportive of and problematic to the inclusion of local TRMS and the TEK it embodies.

The final theme in this analysis is that the Western park concept is both supportive of and problematic to the inclusion of local TRMS and the TEK it embodies. This theme developed by analyzing the various subthemes that emerged from interviews with community members and park staff and managers. The subtheme that was supportive of the park concept was that the area was important and required protection from resource extraction industries. Subthemes that are problematic to the park concept included: different values associated with notions of protection and conservation in the park, the park as a cultural landscape versus a recreational space, and frustrations in the community with the legitimacy of knowledge entrenched in Western institutions. The following sections discuss these subthemes and how they relate to the overarching theme. To contextualize the area within the Tr'ondëk Hwëch'in community and show the connections between landscapes and culture, a discussion of Tr'ondëk Hwëch'in members' connection to the area is presented first.

5.6.1 The Park is a Cultural Landscape

> [I]t's a beautiful country, but we can't just live on beautiful country, we have to protect it. (P16)

The connection to the Tombstone landscape runs deep thorough the Tr'ondëk Hwëch'in community and is expressed through direct interactions with the area (hunting, fishing, berry picking, gathering water, etc.) and through stories. Community members do not speak of their connection to area as a park but rather as a cultural landscape - a landscape that is connected to knowledge and memories that form the Tr'ondëk Hwëch'in identity. Lands within the park itself are seen as are important habitats, but most importantly as important parts to the whole territory and the overall landscape.

> [U]nless you bring it up right now, I don't know it as a park. (P11)
>
> When I was young, it wasn't really known as Tombstone Park. Tombstone area. I would go up the Dempster, quite often, in the summertime with my Aunt and Uncle. Fishing, or, hunting. (P3)

The importance of being able to return to the area to re-experience your family history was expressed in discussions about the area.

> They always say, wherever you was raised, you go back there, and spend time there. (P1)
>
> [I]t's in our spirits [homeland] where we just want to be a part of that all the time…it's like a part of our identity and without it we feel a little bit lost, or don't feel whole. (P3)
>
> Every September, we all go up there [Tombstone area]. Spend time and we went through the trails where mom took us to pick berries, and, hunt with my dad…[w]e continue going up there…I want my kids to continue going there when I'm gone. (P1)
>
> I learned that [area] through my parents and through all the older people in Dawson, always talk about it, how they used it for hunting, trapping…(P8)

This landscape is entrenched with social and cultural meanings and memories and returning to it reaffirms this connection: it is a cultural landscape. The community's desire to protect this connection and the landscape is discussed next as are the different definitions for 'protection' that emerged throughout the study.

5.6.2 Protection from Resource Extraction Industries

As the previous section shows, many generations of memories, histories and stories are tied to this land; it is an important cultural landscape to the history of the Tr'ondëk Hwëch'in. It is therefore not surprising they initiated its protection during their land selection process.

> Tr'ondëk Hwëch'in had a land selection in that area…and, you know, it was made back in the mid-80s, as I understand it by the Tr'ondëk Hwëch'in, and the way Percy Henry described it, it was really to preserve the headwaters of the 12 Mile, and the Blackstone Rivers, and also to preserve, you know, the beautiful area but not so much for aesthetics as for cultural beauty. [P]reserve the ecological, the environmental and the cultural values in that land. (P4)

> [O]ne of the objectives to the whole agreement [UFA] is to preserve a way of life that's based upon a spiritual connection to the land. The Tr'ondëk Hwëch'in people have a spiritual connection to the land. [T]he whole cultural identity of the Tr'ondëk Hwëch'in has to do with the land, and, being stewards of the land, and maintaining the land in, you know, a pristine condition. (P4)

The creation of the park represented a win-win scenario for both the Yukon and the Tr'ondëk Hwëch'in government and allowed the Tr'ondëk Hwëch'in to protect the area and select other lands in their land claim. As a result, Tombstone Park is legislatively tied to the rights included in the Umbrella Final Agreement (UFA), as are the rights for Tr'ondëk Hwëch'in to continue to hunt and gather in the park. While the protection of isolated zones of land, like a park, does not conform to how Tr'ondëk Hwëch'in approaches stewardship discussed in preceding sections, the need to protect the area and the watershed from the realities brought on by contact, namely industrialization, is clear.

> [W]e gotta have a place for people too, but not in Tombstone, or Pelly, or Peel River watershed. Why? Because, like I say, I'm trying to say…we

> want it for the future of our young people. It's going to be their future. (P16)
>
> Tombstone…I'm happy that they made…a park out of it. Because I don't want to see my land get destroyed anymore…I've seen too [much] of my land get destroyed by mining. Yeah, a lot of land been destroyed and I don't want to…see Tombstone get destroyed like that. (P8)
>
> The watershed has to be protected. I don't care what anybody said. (P16)
>
> Everything runs in[to] the Yukon [other drainages], everything runs through Tombstone. (P2)
>
> [T]hey wanted to protect the water, the source of our drinking water for the future. (P12)
>
> [I]t's important to try and protect…the habitat of the Porcupine caribou, because they are one of the…herds that has the longest migration pattern, for calving and wintering…so land is important in terms of making sure that their migration areas are…not occupied by an overwhelming amount of industrial activity, I guess. (P3)
>
> Like they say, that's the most beautiful country, but, can be mean. Unforgiving. Wintertime's cold. Summertime, mosquito, blackfly. You could live on mosquito. She's a tough world, this guy. That's why we had to be careful, and that's why, at Blackstone, we can, [keep] talking, and they still gonna destroy, if they destroy that one, that be the end of our world, I guess. (P2)

As the excerpts above show, the desire to protect the area from commodification and industry, while retaining their Indigenous rights to continue to use the area, was and still is important. However, all interviewees, park managers, employees and community members noted some key differences between Western and Indigenous notions of protection and conservation.

5.6.3 Divergent Values of Protection

The findings in this subsection relate to conflicting values attached to the park between the local community and visitors within the park, not necessarily between the community and the park, or the community and those involved in park management or its

management plan. Park staff work closely with Tr'ondëk Hwëch'in whose views are highly respected and considered. The trust that has been built in this relationship was evident on both sides. Throughout the park management plan is the recognition that the area has significant cultural and biological values: it clearly recognizes the long-standing relationship Tr'ondëk Hwëch'in have with the area and the objectives include protection of both ecological and cultural values. The park management board also has equal participation from the Yukon Government and Tr'ondëk Hwëch'in Government. Enmeshed in the management plan is the role of the interpretive centre to educate the public about the uniqueness of the park in terms of Tr'ondëk Hwëch'in involvement and values and their continued traditional use rights. The centre therefore serves as a hub for the interface between the community, the park and its visitors.

The protection of this area within a land tenure arrangement and Tr'ondëk Hwëch'in involvement in the park management board is an example of how Tr'ondëk Hwëch'in maintains their rights and their distinct cultural identity within the Western concept of a park. However, Tombstone Park is managed under the Parks Act and does not currently have regulations in place, so park staff are not able to enforce management directives that are locally specific. The result is a park managed by overarching Western paradigms of land and resource management that consider Tr'ondëk Hwëch'in values, yet actions to protect biodiversity within the park are still guided by Western science, policy and management.

The need to protect the area from commodification is one place where Western and Indigenous values converge. How you protect (or conserve) areas or resources and what it is protected for is where the values diverged. When I asked one Elder if they

thought Western ideas of protection or conservation were similar to Tr'ondëk Hwëch'in views the reply was, "[w]ell, like I told ya, they only know what they learn in university. We learn from the land, from the animal." (P2). When I asked a few Elders if traditional ways to care for the land were included in Tombstone Park the reply was, "they try" and "I don't see traditional ways, but they try to make it to work…" (P8)

> [O]ur way of protecting our land is you've got to respect your land. You've got to respect what's on your land. And you've got to make sure it works. You can't just say, "Okay, I'm going to protect my land," and then without talking [to] the other young kids about it as they're growing up. (P8)

> My law is this: We look after what's on my land. We respect what's on our land. We take what we need. We don't overkill. [O]ur law to protect our land is not like you guys when it's written on a piece -- in a book there. Yeah, that's…the way it goes for two different cultures. One by the book, the other one by the respect your land." (P8)

The quotes above describe epistemological and ontological differences between Indigenous and Western notions of conservation. In the Indigenous view described above and from other interviews, protection is intrinsic to resource management systems. It is not an external management strategy but bound to the way Tr'ondëk Hwëch'in "takes care of" the land and animals and their spiritual obligations to do so. Tr'ondëk Hwëch'in views on Western management noted above are that Western learning about nature comes from a book and university rather than on the land, as part of the land. Non-Tr'ondëk Hwëch'in members involved in the park also mentioned the different values attached to protection.

> [T]he Western kind of view of using the park area is very different than the Indigenous way, I would think, you know? Again, it's coming from a sort of, a, they enjoy the space and have connection to the land, and it supplies them with what they need. (P13)

When asked about how Western and Indigenous ideas of conservation might differ one respondent answered, “[w]ell, I suppose just the word, ‘idea’. I mean, the fact that we [Westerners] think of conservation as an idea, whereas for aboriginal people, in days past, it was just a way of life.” (P10) One aspect of the park where divergent values attached to protection were particularly evident was in discussions about user-group conflicts, in particular conflicts between subsistence hunting and recreational use.

> I think [to Westerners] conservation isn't killing things, really. No matter how you look at it. (P13)

One Tr’ondëk Hwëch’in member who used to work in the park explained a situation where a moose was killed in front of park visitors:

> And I explained to them, "This is a park that is, you know, in collaboration with the First Nations, it is tradition, it is what they know, and it is natural and it's - it's healthy, wild meat." (P12)

Park staff report how certain types of visitors have the most difficulty understanding why hunting is allowed in the park. These visitors tend to be international or other Canadians (mostly from the south or east).

> And then you also have tourists who, most have never been in a park like that, because there's not many of those around the world, so it's pretty interesting to have you know, someone that came to see a moose, watching it die. You know…people haven't seen anything die, so, you know, to watch someone hunting is a pretty, if you're ready for that, it's a very exciting experience, and if you're not very ready, it can be quite traumatic, so, it's an interesting park that way. You know, and that part isn't advertised in all those things, which, maybe it should be a little bit more advertised, in the marketing and stuff, you know, that it is a park where you use the resources in it. [T]hat's an interesting part of the pie, of the park. (P13)

For those involved in the park management plan, hunting in the park was not something that was contested during the establishment of the plan: it was “a given”, along with the

understanding that subsistence hunting is tied to Tr'ondëk Hwëch'in values, identity and rights.

> Well because it came out of the, Tr'ondëk Hwëch'in's final agreement. To protect the park so they could harvest there. They wanted…to protect the area from all kinds of other things, I guess especially mineral development, which would then encroach on their wildlife habitat, so, I mean, that's part of why the park is there….I can't remember any discussion about that not being of value, for the park. (P10)

Other user group conflicts noted by park staff referenced conflicts between wilderness seekers and commercial groups. Those coming to the park for a true wilderness experience are often upset if confronted by large groups of people because it conflicts with their notion of wilderness. The increase in visitation to the area was credited to easy access to the Arctic the Dempster Highway affords, and an increase in people seeking wild spaces. Other attributes attributed to drawing in visitors included the fact that it was a park and that a green space on the map makes people wonder why that area is so special. Another interviewee felt that people are drawn to parks for the wilderness, but the "safe wilderness" parks provide.

> [P]eople like to go to an area where they feel safe, if they want to go to the wilderness, and if they know park rangers are walking around that will help them, that's quite a big thing. And a lot of people don't like walking off a trail. People like trails. So, there's, a park has trails and a staff, and it's managed, and it'll have a campground. (P14)

Tr'ondëk Hwëch'in members noted the increase in recreation within the park and two said they no longer hunt in the park to avoid conflict with hikers and other recreationalists. These members and two park staff also noted decreasing numbers of animals in the park due to an increase in recreation. The two community members also expressed discomfort hunting in a park because of perceptions of subsistence hunting by many visitors.

5.6.4 The Legitimacy of Knowledge

All age groups of community participants noted frustration with the need to fit Indigenous perspectives into Western paradigms and the lack of legitimization of traditional systems and knowledge. While these discussions were not usually in direct relation to the park itself, the recognition that the park is a territorially held park was noted.

> I think the chief and council nowadays, have to get mixed up more with your people, more than what they have been, you know? (P16)
>
> [W]e're a self-government, but we answer to Yukon Government and…sometimes I don't feel like our opinion on the matter is being heard. (P12)
>
> [I]f we didn't have our self-government agreements, you really think they would be sitting down with us? (P16)
>
> [T]hey don't take any spiritual or First Nations views or anybody's views other than a political government or government that is in power and their lawyers pretty much write the…regulations, on most stuff that I've read. And it differs quite a bit. Like our plan for the park took a long time to go through – and all we wanted to do is try to have more connection and it just took so long for them to understand that… (P12)
>
> Tombstone, you know, how we try to fight for that area is that we didn't want no mining in there, no hunting, no, whatever…politics is funny… the way I look at it is…they're fighting for their rights, and I'm trying to fight for my rights. (P16)
>
> And, I think, when we [are] talking about culture, you know, way back, I'm talking about way back in the forties, I hear the government talks, eh? Native people this, native people that. The wrong way, in the wrong way, some of them say this, and some of them say that, and then we try to, we try to explain to them…how native people live, and respect the earth and the animals, you know? But when you have politics, it's really hard for native people to…at that time to try and explain, you know, because…not all elders could speak English, you know? (P16)

One Elder spoke about meeting with the federal government during land claims:

> We [said]…we're here for our land. We not here for our handout. We want to know what you're going to do with us, with our land. So, that was the question. [they said]"how [you] gonna live, you got no, legislation at your house, where you know what you talk about, you know. You gotta be government, you gotta have your own law, eh?"
> But, you did have your own law.
> But it's not recognized. That's what I said, how do we survive for thousands and thousands [of years]…(P2)

The same Elder from this final quote summed up the validity of traditional knowledge in Western systems eloquently in terms of my research… "people like you come to me, but what will you use? [I]'d say it's no use because I tell you about – but it's got no backup or got told by somebody else."

The effects of colonialism have put Tr'ondëk Hwëch'in in a position where they have had to repeatedly legitimize their knowledge, their laws, their rights, and an opportunity for a voice at the table. Colonization has also contributed to significant losses in cultural traditions for Tr'ondëk Hwëch'in:

> [F]or us and our traditional territory, we've lost a lot of our values, and our traditional laws, because they haven't really been, brought out and spoken about. One of the things is because, our people have been integrating with non-First Nations people for over 100 years, compared to other communities where they still had a lot of those values and traditional knowledge passed down, from one generation to another. Whereas our people were basically integrated into mainstream society, I guess, and, along with residential school, basically, took a lot of that away. (P3)

Despite these frustrations, members spoke of their determination to work together with the Yukon government. The idea that "we are in this together now" dominated throughout interviews and many conversations. Despite this legacy and the fact that Indigenous systems are currently forced to fit into Western paradigms of management and government structure, including those within the park, Tr'ondëk Hwëch'in remain a resilient community actively asserting their Indigenous rights. Tr'ondëk Hwëch'in

maintains their rights within the park and these rights are embedded in the management plan and tied directly to Tr'ondëk Hwëch'in final agreement; the result is robust protection status. The right to hunt in the park means that the First Nation is able to use the area as they always have. The values these hunters bring with them are distinct to Tr'ondëk Hwëch'in and continue within and around the park.

> Well, in reality it is a park.... It's, just a part of that evolution that carries on, I guess. But, in regards to traditional harvesting, whether, whether it became a park or not, it's still a place where our people harvested food, and it will probably always maintain that. (P3)

6.0 Discussion

6.1 Research Problem and Objectives

As we confront the current global crisis of biocultural diversity loss, we must look to where connections between culture and nature persist and where they are threatened. The inability of Western science and management institutions to respond to the rapid degradation of biological diversity call for more in-depth understanding of the ways humans have co-evolved with their environments. Overlaps and links between biological and cultural diversity are known and significant to conservation goals, yet the characteristics of these links are not well understood. Around the globe, areas of biological diversity have been sustained by Indigenous peoples' knowledge and connections to nature. Protecting the diverse perceptions, knowledge, practices and innovations in these areas is becoming increasingly important to our global capital (Cocks and Wiersum, 2014; Gavin et al., 2015; Maffi, 2010; Maffi and Dilts, 2014).

In order to better identify and assess biocultural conservation and the goals that follow those assessments, we need to know more about the 'bridges' that link natural and cultural systems within conservation areas. TRMS represent one of these bridges between nature and culture and are the result of adaptive responses that have evolved over time. These systems integrate practices, beliefs and knowledge into a range of habitats and species through the co-evolution of culture and the natural environment. They are SES that reflect deep historical and cultural connections to particular species and places. It is therefore suggested that a better understanding about the connections between beliefs, knowledge and practices in TRMS can inform new conceptual shifts within conservation principles and practices.

The objectives of this study were to develop an understanding of how knowledge, beliefs and practices of caribou are interrelated in Tr'ondëk Hwëch'in management system and connected to the landscape and Tombstone Territorial Park. The research was designed to illuminate the traditional management system for caribou and how it might inform conservation goals within Tombstone Territorial Park and more broadly, biocultural conservation.

6.2 Research Questions Revisited

Tr'ondëk Hwëch'in have maintained culturally distinct spiritual and a material ties to their homeland and to caribou, despite generations of colonial influences. This study highlights the interactions between their knowledge, beliefs and practices through an exploration of how beliefs about the natural world and their relationship with animals inform and guide management strategies to ensure the sustainability of resources. Extensive observational, empirical and experiential knowledge of complex ecological processes was shown to guide management practices toward natural process maintenance rather than single species management. The system is monitored and reinforced through social and spiritual mechanisms, or rules-of-use grounded in traditional knowledge and traditional law.

The study found Tombstone Park objectives that contribute to goals within biocultural diversity conservation to include the recognition of the long-standing relationship Tr'ondëk Hwëch'in have with the landscape, the protection of Indigenous rights for subsistence activities, the protection of important habitats that support subsistence activities and the protection of Tr'ondëk Hwëch'in values. The TRMS continues to operate in the park through citizens' rights to use the park area as they

always have and through collaboration in park management. A significant barrier to incorporating these systems into park management more completely includes a lack of legitimization of traditional knowledge within Western institutions and hegemonic Western perspectives of the environment as wilderness spaces where use is limited to recreation. Further acknowledgement and inclusion of Tr'ondëk Hwëch'in ways of knowing and interacting with the environment, not cultural just values, into conservation goals is required to achieve a biocultural conservation approach. A paradigm shift is therefore needed to realize the immense potential these systems can contribute to local and global conservation goals. The study found that research into TRMS highlights connections and links between nature and culture that are necessary for biocultural approaches to conservation and are a useful tool to advance this shift in resource and conservation management.

The following sections discuss how beliefs are interrelated to knowledge and practices and how notions of conservation identified in this study relate to conservation goals in biocultural diversity. This section focuses on how beliefs about nature are expressed in traditional law and applied to conservation knowledge. It also outlines how TRMS are adaptive. The section after that focuses on how beliefs and knowledge interact with management practices to sustain resources. A discussion about the interactions between these practices and Western management practices is used to highlight areas of overlap between the systems and how misunderstandings have been created through epistemological differences. How conservation knowledge is expressed in Tombstone Park is explored followed by examples of tools other PAs are using to

better incorporate Indigenous ways of knowing into PA objectives to move toward biocultural conservation.

6.3 Beliefs and Knowledge About Nature

Tr'ondëk Hwëch'in are connected to their knowledge, their history and their community through place. This study found that TEK was and still is acquired through practices on the land despite significant cultural changes resulting from European contact. Similar findings have also been noted in the Canadian north-west (Kartveit, 2014; Kasstan, 2016; Nadasdy, 2003). Traditional methods of teaching and learning continue to transfer important values and beliefs to youth through their families, community and seasonal culture camps. Values and beliefs distinct to Tr'ondëk Hwëch'in were noted throughout participants, regardless of age or gender. This is a testament to the resilience of this knowledge despite disconnections from the land from residential school systems and industrial development that has been ongoing since the turn of the 20th century. Tr'ondëk Hwëch'in continues to be a culturally distinct group with extensive local traditional knowledge that is embedded in a strong cultural identity and linked to their traditional territory. It also highlights how Tr'ondëk Hwëch'in knowledge has adapted through time to meet new demands posed by living with Western systems and institutions.

Tr'ondëk Hwëch'in environmental knowledge is grounded in beliefs about the natural world that include obligations of stewardship that are very different than beliefs embedded in Western resource management. At the heart of this difference is the relationship between humans and nature and spiritual obligations to care for nature. Keali'ikanaka'oleohaililani and Giardina, cited in Berkes (2018:40) explain stewardship

obligations that stem from a belief in the sacredness of nature: a "[s]acred relationship must be the foundation of any successful sustainability effort, with success achieved only when resource management practices and policies engage the spirit and are aligned with equitable and respectful interactions among human and non-human." This thesis highlights how a spiritual connection with nature, including caribou, underpins practices to sustain resources and habitats. Nature is provided to humans, it is a gift to be respected, taken care of and honoured. Obligations to care for nature involve other beliefs identified in this study such as an obligation to not interfere with natural processes. Nature is made up of complex webs of interconnections that humans are part of. Interference with natural processes is considered disrespectful and a misplacement of human's place in the universe. The Western concept of "resource management" is therefore problematic.

Traditional resource management systems are better described as human-environment relationships (Berkes, 2018). Wray and Parlee (2013), Nelson (1983) and Nadasdy (2003, 2017) agree that these systems are based on principles of good relations, rather than management. Good relations between people and animals and people and nature are goals in these relationships where the best outcome is the well-being of both nature and people (Nelson, 1983). These relations are built on the notion that other beings have agency – animals have their own codes and are intelligent enough to make their own decisions. Agency also extends to what Western thought considers inanimate like glaciers, rivers, and fire (Cruikshank 2005; Berkes and Davison-Hunt, 2006). This epistemology is critical to understanding TRMS and the mechanisms or rules that enforce the system. Tr'ondëk Hwëch'in's relationship with animals was found to be spiritual but

also social and deeply embedded in the belief that all things are connected. Tr'ondëk Hwëch'in explain that:

> It is known in the Athapaskan world that humans and animals are the same in most ways. We both have thoughts and feelings, ways to communicate within our communities and with others, families and homes to care for, and so on. Although humans are aware that we are different from animals there is a strong belief in, and respect for, the similarities and interconnectedness with the animal world. (Beaumont, in progress: 11)

Salomon et al. (2018:4) note that many First Nations on the coast of British Columbia have core principles of connection in their relationships with the environment that guide stewardship and "resonate strongly with the notions of complexity, connectedness, and feedbacks in adaptive systems." They note how Nuu-chah-nulth Nations use Hishuk Ish Tsawalk, to express how all things are connected and the Haida use the concept of Gina'waadluxan gud ad kwaagid, which means "everything depends on everything" (pg. 4). These principles are important to conservation and conservation knowledge and form foundations from which to understand TRMS. Gauvreau et al. (2017) similarly note how the social and cultural relationship with Pacific herring forms the basis for Heiltsuk First Nation herring management.

As this case study shows, the maintenance of good relations with animals and the natural world is reinforced consistently in all interactions with the natural world and is perhaps most evident in the rules-of-use. Rules-of-use are referred to as social or cultural institutions or mechanisms for rules-of-use in the literature (Berkes, 2018; Davidson-Hunt, 2006; Davidson-Hunt and Berkes, 2003; Lepofsky and Caldwell, 2013; Mathews and Turner, 2017; Moller et al., 2009). Wray and Parlee (2013: 70) contend that "[i]f these rules are not followed, and the balance between the animal and human world is not

maintained, 'repercussions will be dramatic'" (Sherry and Vuntut Gwitchin First Nation, 1999:212). This case study corroborates such findings by illustrating how Tr'ondëk Hwëch'in reaffirm their connection to, and relationship with, caribou both in harvesting practices and through rules of use or Dä̀'òle`. The study contributes to the limited Canadian literature on traditional law and how it interacts with resource management, or the maintenance of good relations.

The rituals and taboos associated with caribou harvesting identified in this case study are imbued with spiritual and social obligations to animals, nature and the community. They reaffirm important values of respect and reciprocity that guide and monitor resource use and enforce sustainable use through both social and supernatural mechanisms (Sasaoka, 2017). Other rules like keeping camp clean and not leaving tool lying around reinforce safe hunting/camp practices. Consequences for not following Dä̀'òle` are spiritual (i.e. bad luck) and social (from the community and traditional authorities). Misfortunes from supernatural forces play critical roles in resource conservation and sustainability (Sasaoka, 2017). Sasaoka (2017: 100) points out that spiritual or supernatural mechanisms that monitor use of common resources is self-directed, which is both practical and culturally relevant, versus external formal social institutions that come at a much higher social cost. Similar testimonies are included in discussions about TEK within Canada (Cruikshank 1981, 2005; Davison-Hunt, 2003, Berkes, 2018; Turner and Berkes, 2006 and Nadasdy, 2003).

While Dä̀'òle` provides more specific rules-for use to enforce constraints likened to taboos in other research, overarching traditional laws guide proper conduct and enforce social norms that also lead to constraints. As mentioned in the Introduction, Tr'ondëk

Hwëch'in define traditional law as a code of conduct "a set of known social expectations and behaviors is Tr'ëhudè in our Hän language" (Beaumont, in process: 9). Vieille (2012: 3) describes traditional (or customary) law as a social regulator "interwoven with the deep spiritual and religious underpinnings" where people do not live under traditional law but with it. These laws are entrenched in worldview and the lived experience and govern all aspects of life including social relationships and interactions with the natural world (Vieille, 2012). Tr'ëhudè similarly guides social and spiritual expectations to "live a good life" and includes, but is not limited to, principles and values of respect, reciprocity and humility that guide the relationship people have with the natural world, with animals and their community (Beaumont, in process). Practical guides to living a "proper life" are tied to the supernatural, embedded in stories (Berkes, 2018; Beaumont, in process; Cruikshank, 1981, 2005; Turner, 2008; Mathews and Turner, 2017; Nadasdy, 2003) and help with "understanding the nature of reality" (Berkes, 2018:60).

Berkes refers to work by Indigenous scholar Atleo (cited in Berkes, 2018:60) who contends that while "scientific inquiry depends on theory, Indigenous knowledge systems depend on myths." Myth or stories discussed in this study offer what Berkes (2018:62) refers to as protocols and Atleo refers to as "agreements and treaties" that have been made between humans and animals. Traveler stories in this study provide a necessary context to understand the agreements that have been made between humans and animals. The Boy in the Moon story provides important lessons about following proper protocols in caribou harvesting and lays out key elements central to the relationship between caribou and people that is specific to caribou. These stories provide ethical and moral codes of conduct and depth of meaning to the obligations people have to animals where

the separation between nature and culture does not exist. They act as a spiritual mechanism to constrain resource use (Sasaoka, 2017) and also provide important historical knowledge.

This case study found Tr'ondëk Hwëch'in social systems and the knowledge embedded within them have adapted to changes through time but are still expressed within the community and in current governance: they are thus examples of adaptive management. Tr'ondëk Hwëch'in explain: "Like our worldview and our culture our Tr'ëhudè must remain flexible and ever-changing to ensure that it remains relevant and reflects our present and future realities." (Beaumont, in progress: 9). Tr'ondëk Hwëch'in environmental knowledge has continued to adapt to changes because of the built-in flexibility of observational knowledge that is shared and transmitted through direct experience, stories and myth.

6.3.1 Summary Related to Finding of Beliefs and Knowledge of Nature

This case study demonstrates how Tr'ondëk Hwëch'in conservation knowledge is linked to beliefs and social institutions for caribou. It also shows how knowledge to sustain caribou health and numbers develops in situ through practices on the land tying knowledge to both land and practice. Knowledge remains fluid by adapting to changes observed through these practices and interactions with the landscape. Social and spiritual mechanisms that enforce and guide practices also adapt to changing conditions while being deeply entrenched in local histories and memory through stories and traditional laws. These mechanisms promote conservation of resources by continually transmitting social and spiritual obligations to animals and nature. It is these features that allow

groups to learn new adaptive responses to inevitable ecological and cultural changes and make the system adaptive, flexible and resilient (Turner and Berkes, 2006). They are a form of adaptive management designed to contend with uncertainty, unpredictability, variability and social learning.

As discussed in Chapter 2, the knowledge-beliefs-practices framework for TEK analysis involves four interrelated levels of traditional knowledge including: worldview, social institutions, resource management system and worldview (Berkes, 2018). This thesis has attempted to show how resource management strategies are interrelated within Tr'ondëk Hwëch'in worldview and Tr'ëhudè, knowledge, Dä̀'òle`and beliefs about the natural world. The interrelatedness of these was problematic during the analysis and involved effort to untangle them so they could be articulated in Western terms. The results of this study highlight ways Tr'ondëk Hwëch'in worldview encompasses all levels and provides meaning to perceptions about the environment. Berkes (2018: 46) points out that social institutions and resource management systems have significant overlap and arguably are one in the same. In many studies, they are considered together but in this case study they are discussed separately.

For example, selecting the right animal for your needs was identified as a strategy to sustain resources but it is also a rule-for-use. Rules to not waste and to share meat could be conceived as a strategy to sustain resources and not a rule-of use. In this study, rules-of-use were categorized in the context of Dä̀'òle`, whereas strategies were identified in multiple contexts but in reference to ways to sustain caribou. Articulating the interrelatedness of these levels in Western terms was equally challenging. It is therefore important to note that these are not sharp boundaries; they are fluid and are best

understood in context. This highlights the importance of understanding underlying beliefs and values attached to nature and how this informs every level of TEK and TRMS.

6.4 Beliefs in Strategies

As Berkes notes (2018: 47) "ecological practices require an understanding of ecological processes, such as the functional relationships among key species and an understanding of forest succession." The ecological process at play within TRMS has been noted in other studies (Berkes, Colding and Folke, 2000; Berkes, 2018; Davison-Hunt and Berkes, 2003), but is rarely described in detail as it relates to core beliefs, values and knowledge for caribou. This study found that learning from animals, or observing caribou herd dynamics biologically and socially (i.e., physical changes and how they interact with the landscape, with the rest of the herd and other species) informs existing corporate knowledge of herd dynamics and their temporal and spatial movements necessary to understand and monitor ecological processes within the herd and the environment. This knowledge is applied to monitoring functional relationships that affect the herd and herd health. Beliefs that all things are connected and have a purpose that humans cannot fully understand are involved in strategies that seek to maintain these important relationships. It was also found that being humbly aware of your place in the universe and your obligations informed practices to not interfere with the 'mysteries' of nature was applied to rules that discourage interference with these processes or key functional relationships.

Berkes and Davison-Hunt (2006: 42) in their study on plant use and forest succession found Anishinaabe beliefs that the Creator has provided everything needed for

survival means they are obligated to take care of these gifts and not harm them. This includes a responsibility to not influence habitat distribution and ensure principles that translate to "as was, as is" remain in management strategies. They found the notion that all things have a purpose was important to the maintenance of a whole suite of biodiversity. In terms of plants, this was because one could not know what might be useful in the future and the principle of "as was, as is" was applied to sustainable resources for future generations. They explain that: "In the Anishnaabe system, the land reveals itself in its multiple manifestations, and the Anishnaabe people are part of the natural order of the land" (2006: 43).

> The Anishnaabe landscape is multifunctional; it produces all that is needed by the people, as long as biodiversity is maintained throughout the landscape. This does not mean that Anishinaabe people do not undertake practices that change the landscape. However, it does mean that such practices are in line with natural processes (such as succession) and help maintain spatial and temporal diversity at both the landscape and the site level. (p. 43)

This case study found parallel results and that Tr'ondëk Hwëch'in maintain a full suite of biodiversity in the "care of nature" but also through the maintenance of nature and natural process or functional relationships within and between species.

Key functional relationships between species noted in this case study were between wolves and caribou and humans and caribou. These relationships were described as important to the maintenance of caribou herd health and sustainable populations. For example, the wolf and caribou relationship serves a purpose and humans are in no place to interfere with it - interference upsets the balance in this relationship (and threatens biodiversity). Like the Anishnaabe example, for Tr'ondëk Hwëch'in this does not preclude practices to "help" or manage this relationship. For

example, people help caribou by harvesting the right animals - ones that are not important to reproduction or migration like big bulls or caribou leaders and continual harvesting (in proper ways) is believed to maintain reproductive pressure. In Chapter 5 it is also noted that if there were too many wolves, people would help caribou by killing wolf pups. This was noted as a practice to keep wolf populations stable in relation to caribou numbers in a way that did not leave pups without their mothers or trainers/leaders. This ensures important social networks in wolf communities remain intact so the functional relationship between these species is not compromised.

Cascading impacts to ecosystems and prey populations from lethal predator control programs is not well understood in Western science (Doherty and Ritchie, 2017). However, recent studies have shown that disruption in top-predator keystone species (like wolves) can result in biodiversity loss (ibid). Furthermore, wolves are territorial with complex social systems and the removal of "dominant individuals from populations" disrupts social systems and destabilizes social structure (ibid: 16). Implications for biodiversity maintenance resulting from these programs are not well understood in Western science and many are suggesting a multi-species approach is needed. This case study illustrates how the traditional resource management system is a multi-species approach. It also uses an inter-species approach where functional relationships within species are maintained.

Harvesting restrictions or constraints on animals with functional relationships within species were identified in this case study and framed as a preference or "good management" rather than a complete ban, which in the subarctic where food can be very scarce makes good evolutionary sense. Many studies have also noted the management

strategy to restrict the harvest of certain animals at certain age, sex and life-cycles to ensure reproductive success that promotes sustainability of resources (Berkes, Colding and Folke, 2000; Berkes and Davison-Hunt, 2006; Lepofsky and Caldwell, 2013; Mathews and Turner, 2017; Turner and Berkes, 2006). While the biological results of these strategies are not the focus of this thesis, there are a few studies that have investigated traditional harvesting strategies in light of their biological effect on reproductive and migratory success that are relevant here and provide opportunities to outline areas where knowledge systems involved in wildlife conservation meet and diverge.

Bielawski (1995:224) found that Yup'ik Inuit harvested resources in ways that enhanced the strength of the resource. She describes how "[t]he time-tested knowledge and wisdom of years passed demonstrated the best way to manage and regulate the moose, caribou, and other four-legged herds was to allow only the taking of non-breeding young bulls and old cows." She also believed that state management systems were designed to manage sport hunting and therefore targeted the larger, healthy bulls that were the main breeders. The result was that strong genes were being killed off and this had consequences to healthy population numbers.

Padilla (2010), who investigated the traditional practice of not hunting caribou leaders in the Canadian north, reports findings that are important to this study. She found "caribou leaders may have heritable characteristics for behaviour that increase the reproductive fitness and survival rates of leaders and/or other animals in the herd" (ibid: 146). She also refers to other studies that found trophy hunting of mouflon and big horn

sheep had “evolutionary consequences due to the loss of traits associated with high reproductive fitness” (ibid: 145).

Western caribou management policies to only hunt the bull is based on the principle that protection of cow caribou results in greater reproductive success. It represents restricted harvest based on sex. Seemingly subtle but important differences between Western and Indigenous strategies were noted in this study. The traditional strategies focus on younger bulls not in rut and do not include a complete restriction on cows to maintain a balance of species of each sex within the herd. It represents restrictions based on sex, age and life-cycle, but not complete bans. Hunting season for non-First Nations is during the rutting season and while local biologists say the local policy does not target big bulls like other parts of the country, the perception within the community is that non-First Nation hunters are selecting bigger bulls due to values that align with trophy hunting. Western managers credit hunting restrictions on cow caribou as a main driver in rebounding caribou populations but Elders interviewed here were concerned about the overall health of herds due to this policy and interferences like the wolf kill.

Lertzman (2009) discusses the many similarities between Western and TRMS, some of which have been found here. As Lertzman points out, each system is embedded within its own socio-cultural context where the nature of reality is expressed in our beliefs about the natural world. Western management systems “reflect a significant base of scientific knowledge about resources and ecosystems, our relationships and patterns of use also reflect a strong imprint of our social institutions, historical precedents, and our beliefs about the nature of the world and our role in it.” (pg. 340). Lertzman goes on to

show how describing management on a continuum of anthropogenic modification highlights how management strategies often overlap between systems (i.e., selective harvest) and that rather than being two different systems it is different beliefs and knowledge informing strategies within the systems.

Padilla's research was in part designed to address the Porcupine Caribou Management Board's attempt to restrict the hunting of caribou leaders through a hunting ban on leaders. This board is co-managed, and the ban was in response to concerns from communities. Follow up on the failure of this ban is described in Padilla and Kofinas (2014) which discusses how state-level regulations were contested among the First Nation communities involved in the ban. Several factors are noted as to why the ban did not work, but importantly the heterogeneity of customary laws was an issue the ban did not address. This result highlights how First Nation groups can have similar management strategies (i.e., don't harvest leaders), with traditional values and laws that are culturally distinct. In fact, several community members interviewed for this study noted differences in these values when referring to other First Nations hunting in Tr'ondëk Hwëch'in territory.

While management practices may have significant similarities between Indigenous groups, knowledge and worldviews that underpin these practices and the social institutions that result will differ because TEK and TRMS develop in situ. Knowledge develops in response to specific environments and is affirmed through practices on the land; it can't be told, but is experienced (Davison-Hunt, 2003). How a group monitors and enforces resource use is specific and adapted to their homeland, their socio-cultural and socio-political histories and therefore their cultural identity. These

socio-cultural and historical adaptations will be reflected in different management strategies.

6.4.1 Summary of Findings Related to Beliefs in Strategies

Underlying beliefs and knowledge about biological and ecological relationships inform traditional management practices. The case study highlights "conservation practices including harvest selection by age, sex, size, and reproductive stage and season for various species" (Tuner and Berkes, 2006: 498) and the maintenance of ecological processes between species to ensure populations remain healthy and sustainable. The above examples outline overlaps and subtle differences between Western and Indigenous knowledge. While the traditional system for caribou restricts the harvest of animals based on sex, life-cycle and age, Western policies only restrict harvest based on sex. Both systems include predator control management. Traditional predator control targets the removal of animals that will not upset animal social systems while Western predator control has targeted dominant individuals (mature wolves). However, both are management systems using the definition provided by Lertzman (2009), and used in this thesis, where management includes actions guiding a system toward a desired outcome and a management system is the sum of these actions and the process in which they are legitimized by social norms, social institutions and those carrying out the actions. In this way we can see that the desired outcome of both systems is healthy and sustainable caribou population numbers but appropriate strategies to achieve this and the social norms and institutions differ. Western policies like the wolf kill and only take the bull have not necessarily ignored traditional knowledge and management, most likely they have misunderstood it and/or have not framed it as a management strategy similar to their

own. When epistemological and ontological assumptions about the way nature works are considered as part of the management system we can better identify areas of convergence and divergence. The discussion now turns to ways conservation knowledge is expressed in Tombstone Park.

6.5 Conservation of and within Tombstone Territorial Park

Conservation, like resource management, is not separate from the socio-political context in which it is embedded (Gavin et al., 2015: 6). The socio-political context of natural resource management in the Yukon has a history of prioritizing Western scientific approaches and has struggled to provide equitable power sharing with knowledge prioritization at the center of the debate (Kartveit, 2014; Nadasdy, 2003; Parlee et al., 2005; Wray and Parlee, 2013). These issues are bound to the park through the Western institutionalization of the park and the top-down management structure currently reflected in park management. Further bound to the park is the lack of legitimization of Indigenous ways of knowing within bureaucratic structures of the Yukon (Nadasdy, 2003) and hegemonic powers of the state distilling knowledge issues down to a "difference of opinion" (Maclean et al., 2015:198). The park is not an isolated area free from influences of state management and state institutions – it is also a space where Western and Indigenous notions of conservation meet and are expressed.

This case study demonstrates how the Tombstone area is a cultural landscape imbued with social, spiritual and ecological significance. Protection of important cultural landscapes from the effects of industry is a relatively new reality for Tr'ondëk Hwëch'in overall, but one they have been faced with since the Yukon Gold Rush. This research did

not find that the conservation of specific tracks of land was a traditional management strategy, unlike other research that has documented complete restrictions of certain areas or the protection of sacred groves as a traditional management strategy (Gadgil and Chandra, 1992). However, protection for the Tombstone area was initiated by Tr'ondëk Hwëch'in in part to protect an important watershed. The park is therefore an example of watershed protection and protection of biodiversity that exists at ecological edges like the boreal forest and arctic tundra found within Tombstone Park (Berkes, Colding and Folke, 2000). Protection of this ecological edge has likely persisted through time. The numerous archaeological sites recorded in the park point to the antiquity of this overlapping cultural and ecological diversity. It is probable that these edges were purposefully maintained through other traditional practices.

The desire to protect this bio diverse area from potential threats of industry from two governments with disparate views of the environment is an example of overlapping conservation goals. However, several conflicts between Western and Indigenous notions of conservation are expressed in the park that mostly stem from the fact that parks are still considered wilderness recreation spaces in Western thought. This was particularly evident in user conflicts between hunters and hikers and wilderness seekers and commercial groups.

Hunting within the boundaries of a park is a relatively new model for Canada and as a result, the literature is lacking. While this study's objectives were not to measure or document user values, it did illuminate how Western values of pristine wilderness conflict with traditional subsistence and values attached to cultural landscapes and resources. The ideology of wilderness has been noted as a significant barrier to the

integration of Indigenous perspectives in parks (Shultis and Heffner 2016). The notion of wilderness also directly conflicts with the notion of cultural landscapes where the long history of human modification through hunting, gathering, camping and proactive land management is expressed. This study suggests that the values attached to Tombstone Park are still very much engrained in the fortress protected area model and that further integration of the cultural landscape concept would help facilitate more integration of Tr'ondëk Hwëch'in ways of knowing the area.

The results of this case study also suggest that hunters and recreationalists don't easy co-exist in parks. While interviewees acknowledged there has been an increase in recreation within the park in recent years, the impact this has or will have on continued traditional use of the park was only noted by a few. This may be due to the fact that hunting caribou in the area is typically done in the late fall and winter when the park is closed, the fact that caribou hunting was often noted as occurring north of the park, more recent caribou harvest restrictions that have been self-imposed by Tr'ondëk Hwëch'in or impacts from contact with Western management restrictions on TRMS. The effect under-use of natural resources has on biodiversity within PAs is not currently understood (Mauerhofer et al., 2018; Sylvester et al., 2016). However, continued traditional use has a significant effect on knowledge transmission and cultural identity. Increased recreation use within the park is therefore a formidable threat to continued traditional use. Recreation poses threats to food security and importantly other dimensions involved in the procurement of food described here like the transfer of traditional skills and knowledge and the reinforcement of values of respect and reciprocity (Sylvester, Segura and Davison-Hunt, 2016). Harvesting is not simply about getting food: it is an active

engagement with land and resources that is critical to the maintenance of TRMS and the TEK it embodies.

6.5.1 Summary of Findings related to Conservation

Tombstone park is not the traditional exclusionary model for PAs: however, this research showed that there are still several aspects within the park that promote the exclusionary model, including expressions of the wilderness ideology and a lack of Tr'ondëk Hwëch'in ways of knowing the environment. While Tr'ondëk Hwëch'in values are included in park management, they are not expressed as part of a living cultural landscape at all levels. It is clear that park managers see the area as a living cultural landscape and are dedicated to the maintenance of it as such; however, this does not appear to be translating to visitors and may or may not translate to state management structures. The nature/culture dichotomy continues to be perpetuated along with notions that conservation of resources does not include actions like subsistence harvesting. It is suggested that deeply entrenched notions of pristine wilderness within PAs and a focus on the preservation of ecological integrity that is separate from culture needs to be addressed to move beyond the protection of cultural values and toward the protection of living cultural landscapes.

As noted in Chapter 2, notions of wilderness support a naturalistic gaze, and a national identity. The identity of the Yukon is very much bound to both and is often considered "the last frontier" where wild spaces still remain. Interestingly, the results here suggest PAs are also "safe wilderness spaces" where Western ideals of nature can be experienced in a monitored space. Through this examination we can see how Tr'ondëk

Hwëch'in understand the environment is not expressed in the park and that parks are spaces where epistemological stances about conservation are expressed. These notions run counter to biocultural approaches to conservation that attempt to link these systems in locally relevant ways.

6.6 Ways Forward to Bridge the Gap

The opportunity for Western resources managers to learn about complex ecological connections and connections between nature and culture from TRMS is significant. There are several areas where disparate knowledges were found to converge in this study but differences in underlying beliefs about nature and the unequal representation and legitimization of traditional knowledge will continue to create barriers to full integration. Subtle but important differences in environmental knowledge were found to create significant misunderstandings in conservation management even when the overarching goals are similar. Tr'ondëk Hwëch'in ways of knowing therefore need to be included in conservation efforts both within the park and within the Western management institutions and systems they are in constant contact with. Western scientific approaches to conservation management include strong power imbalances where Western scientific knowledge is prioritized and considered the only legitimate knowledge to base management decisions on (Nadasdy, 2003; Saloman et al., 2018). More equitable engagement needs to be culturally relevant and tools to do so are evolving.

A multiple evidence base framework assumes each knowledge system has value and validity in its own context so while a direct translation of knowledge is not realistic the co-production of new knowledge through collaboration is (Tengo et al., 2017). "Achieving such collaboration will require moving from studies "into" or "about"

Indigenous and local knowledge systems, to equitable engagement with and among these knowledge systems to support mutual investigations into our shared environmental challenges" (ibid: 24). Salomon et al. (2018) further suggest the democratization of conservation science where top-down authoritarian approaches are supplanted by egalitarian approaches with actions that induce coproduction and collaboration can increase the range of conservation actions and improve management actions. The authors recognize the need to broaden science to "include multiple knowledge systems" (pg. 1).

Rodriguez (2017) proposes engaging in well-being agendas with communities through the construction of life plans to achieve collaborative frameworks that include culturally relevant perspectives. "A 'life plan' is a plan made by Indigenous people in an effort to maintain traditions, customs, and the hope of having a society with its own identity based on the traditional knowledge of its people" (ibid: 1). These plans have been constructed in some parks in South America and have stemmed mainly from cultural revitalization efforts. When communicated and collaborated with park management they have helped produce intercultural management narratives that aid in combined management objectives that fully consider traditional ways of knowing and management systems. In the Venezuela case, it has led to fire management policies that integrate traditional fire management.

Fernadez-Llamazares and Cabeza (2017) also believe that cultural revitalization efforts build bridges between cultural and biological conservation. The authors examine how Indigenous storytelling projects enhance understanding of values and perceptions about the environment and facilitate cross-cultural learning. As mentioned earlier, stories transmit important biocultural knowledge embedded within TRMS. Fernadez-

Llamazares and Cabeza (2017) found storytelling projects within conservation areas help to develop participatory research agendas that support Indigenous ways of knowing the environment that broaden conservation knowledge and conservation agendas. As noted in Chapter 2, concepts like the ecosystem services approach expands benefits to include political, cultural, economic and health and well-being (Barber and Jackson, 2017).

Tombstone Park exhibits several features that already align with these approaches and the park is active in cultural revitalization projects like 'Tombstone Tuesday' where Elders are provided transportation to the park to engage in traditional activities like berry picking, fishing, or to simply have tea at the interpretive centre. One possible next step would be to develop conservation indicators that match Tr'ondëk Hwëch'in perspectives and goals (or life plans). Using a biocultural approach to develop indicators will ensure the evaluation of sustainable management actions consider the issues and local systems appropriately (Sterling et al., 2017). These approaches would provide important opportunities for park managers and the community to work toward goals that are locally and culturally specific. It would also help identify opportunities to co-produce new knowledge.

Other studies in TRMS in Western Canada (i.e., clam gardens, the use of fire and herring management) using collaborative research structures have been able to corroborate traditional knowledge and significantly enhance scientific investigations in archaeology (see Gauvreau et al., 2017; Lepofsky and Caldwell, 2013; Mathews and Turner, 2017). These studies are great examples of how knowledges and knowledge practitioners can collaborate and co-produce knowledge that is meaningful to both and can be applied to modern management practices. The current case study also suggests

that further research into TRMS that have operated in the park is a good place to start cross-cultural exchanges to build processes for the co-production of knowledge that align with biocultural approaches. It shows where areas of convergence and divergence can be built upon in future studies and highlights the interconnectedness of culture and nature in traditional systems that can lead to new ways to incorporate TEK into conservation management. This case study contributes to this literature and has similar implications for archaeological studies because it too challenges anthropological theories like optimal foraging theory often used by archaeologists to explain subsistence patterns in the archaeological record. This study reveals that common property resources like caribou have been "managed" for generations and the relationship with this resource is important to understanding the management system that has developed and will be expressed in the archaeological record.

Traditional knowledge described in this thesis indicates that caribou fence technology is akin to fish weir technology in that rather than simply a technology to hunt several animals at one time, the technology allowed for the selection of particular animals during harvesting, a key feature in TRMS. This perspective is worth further investigation and indicates that archaeologists need to consider that past technologies are the result of management systems. Further investigations and research that consider the links between TRMS and archaeology can lead to other clues and collaborations. As studies in marine management and fire management have shown, these investigations can also lead to the re-introduction of traditional management practices that help revitalize cultural knowledge and resource management systems that are currently experiencing loss. They also contribute to equitable management structures focussed on the incorporation of all

relevant environmental knowledge into resource management.

This case study also has implications for ecology and conservation science that contribute to Western resource management systems. As noted above, Western science is struggling to understand cascading trophic effects from Western management strategies. This is in part due to the reliance on Western scientific methods that prioritize reductionist approaches over a "systems" approach. Salomon et al. (2018:5) further explain that: "Although reducing complex systems into their component pieces is a common way of coping with complexity, it precludes system-wide analysis and thus an understanding of the critical feedbacks that generated the problem in the first place." As this case study shows, traditional caribou management is a multi-species, systems approach based on observational knowledge of the interactions between and within species. Ecological knowledge about caribou is nested within and tied to socio-cultural knowledge through social institutions that incorporate management strategies and responsibilities. It also includes extensive knowledge about social systems within animal communities. This has implications for conservation science and resource management in general in that it presents significant opportunities to include TEK in meaningful ways that fill gaps in Western knowledge. Furthermore, these are linked SES that provide significant learning opportunities for conservation science to couple these systems to contend with global environmental challenges (Salomon et al., 2018).

Traditional resource management systems, framed as a legitimate management system based on legitimate knowledge of the environment can significantly contribute to global conservation and local resource management. Echoing what many others have suggested, a full appreciation for different ways of knowing the environment is the only

way we will be able to collectively respond to the many challenges that threaten global diversity in the contemporary world.

7.0 Conclusion

This case study found that Western management strategies that conflicted with traditional knowledge and systems provided a useful bridge to discuss TRMS because traditional strategies were most often discussed in juxtaposition to Western strategies that conflicted with Tr'ondëk Hwëch'in worldview. The reality in wildlife conservation is one of blended histories and blended knowledges. As more than one Elder told me, "we are in this together now". Untangling the epistemological and ontological stances, often taken for granted on both sides, is necessary to move toward concepts like biocultural diversity. However, Western institutions will need to recognize Western epistemic supremacy, how this has affected traditional systems in resource management and how it has contributed to a loss of cultural and biological diversity.

Worldview provides the foundation for what are considered appropriate actions in management and as Lertzman (2009) points out, this applies to both Western and Indigenous systems. I remember talking to an Elder who is very knowledgeable about caribou at a spring Elders' camp. When speaking about caribou he reiterated the belief that caribou should not be "bothered". At first I thought he only referring to a spiritual connection with caribou. As he continued I realized he was also telling me that caribou are easily spooked and counting them with helicopters during the calving season had an effect on fecundity. Too often I think Western perspectives discount what Elders say as relevant to environmental issues if there is a spiritual component to what is said. As this research shows, the fact that traditional knowledge is based on beliefs that have a spiritual component does not mean it isn't also based on relevant ecological knowledge. The inclination for Westerners to compartmentalize and reduce information, and the

belief that Western science is value-free, places these discussions in a "spiritual box" not considered relevant to science. Understanding more about how social and spiritual beliefs are linked to ecological knowledge is key to broadening cross-cultural discussions about the environment and the legitimization of other ways to know the environment.

Broadening perspectives on the environment can be achieved through increased education, collaboration and the coproduction of conservation knowledge. In order to reach the goal of coproduction, further education about the ways in which traditional knowledge is applied to management systems is required. It is suggested that broader public and state understanding of TRMS will enhance management on all sides and could contribute to acts of reconciliation that shrink the epistemological gap that leads to further legitimization of Western concepts. Steps to achieve this are provided followed by specific actions that could be taken by Western resource management systems.

The Yukon Government currently requires its employees to attend a history of Yukon First Nations course to contextualize government employee's work in a socio-cultural and historical context. The inclusion of First Nations worldview and traditional law from a First Nations perspective into these courses would broaden cross-cultural understandings and hopefully enable the governments to work beyond a difference of opinion. The addition of guiding principles (like Tr'ëhudè) into Yukon Government protocols and the recognition that both are forms of science embedded within their own cultural contexts would help break down current barriers that prioritize Western science in resource management. This would also highlight ways that SES are linked and provide opportunities for further research into these links.

This case study contributes to a growing body of literature about how TRMS and

the knowledge it embodies remain adaptive through time. Yukon Government has already adopted adaptive management approaches that recognize the uncertainty and complexity involved in resource management and the need for flexible and adaptive management regimes. Including First Nation principles in resource management identified here, like humility and uncertainty, and descriptions about how TEK and TRMS are forms of adaptive management could allow for enhanced collaboration and the integration of traditional knowledge in adaptive management approaches. Moreover, the study has highlighted extensive TEK of complex social and ecological dynamics within and between wildlife species. This knowledge is currently lacking in Western science and provides an exciting opportunity for Western scientists to learn more about these relationships and collaborate to build new knowledge. However, to coproduce new knowledge TEK will need to be legitimized within Western systems and institutions. The use of the term 'traditional resource management system' in this thesis is itself an attempt to shift Western thinking away from persistent notions of wilderness and a lack of purposeful engagement with the land and resources and toward the recognition that Yukon First Nations have been "managing" landscapes and resources for generations.

The following actions are suggested to enhance cross-cultural understandings of the environment, contribute to the legitimization of TRMS and coproduce new knowledge in state resource management:

- Develop a course or module on traditional resource management for Yukon Government employee training;
- Establish new protocols for working with First Nation communities in resource management based on multiple evidence based approaches;
- Include and recognize First Nation guiding principles in environmental relationships and commit to approaches that prioritize humility and openness to learning on both sides;
- Provide funding opportunities for social-ecological research aimed to coproduce

knowledge; and
- Revisit current adaptive management approaches with the aim to include traditional knowledge as an adaptive management system.

The following suggestions apply specifically to caribou management in the Yukon:

- Further identify areas of overlap and divergence between Western and traditional caribou management strategies;
- Consider and consult with First Nations on seasonal changes to non-First Nation hunting regulations;
- Consider and consult with First Nations on restricted harvest of bigger bulls in non-First Nation caribou hunting regulations;
- Consider regional cultural differences in caribou hunting regulations and disseminate regulatory power to individual communities; and
- Conduct further research on traditional predator control strategies.

Applying these actions in state resource management would have a direct influence on conservation science and thus, park management and would also allow the park to better realize biocultural conservation goals. However, the park is also a unique space with multiple and conflicting values with specific opportunities for education and future research.

The park has a unique opportunity to educate the public sphere. Parks are typically viewed as educational spaces and have mandates to educate the public about the natural world with the hope that this will foster a greater appreciation for environmental protection. Tr'ondëk Hwëch'in history and values are currently intertwined in the public education at Tombstone. This platform provides opportunities for enhanced recognition of TRMS and opportunities to dispel persistent myths of wilderness and unintentional management of resources by Tr'ondëk Hwëch'in. Several park staff noted a desire for more signage in the park about Tr'ondëk Hwëch'in values. It is suggested that public interpretation moves away from "values" and toward "ways of knowing" and interacting with the environment. Values are too often frozen in time and are not reflective of the

homeland and overall living cultural landscape that has and will continue to shape the park's landscape. The following suggestions refer to opportunities aimed at broadening ways of knowing within the park:

- Amend park management plan to include plural perspectives of the environment by including Tr'ëhudè and its principles into park management by:
    - Drafting a protocol for park management/staff that includes these principles and commit to ensuring actions in park will consider and adhere to these principles;
    - Require park managers and employees to read and sign the protocol;
    - Require all researchers in the park to read protocols and seek research that is focussed on coproduction of knowledge; and
    - Encourage more social and cultural research in the park.
- Broaden park interpretation and education to include traditional resource management and principles of Tr'ëhudè:
    - At guest sign-in, have a statement about these principles;
    - Include these principles in signage at the park; and
    - Include signage and statements at sign-in that explicitly state that the area has been managed for generations based on principles and perspectives that are different and complimentary to Western science.
- Link park programing with Tr'ondëk Hwëch'in revitalization projects wherever possible;
- Work with Tr'ondëk Hwëch'in on a "life plan" for the park that highlights community goals and community benefits for the park;
- Establish ecological indicators with Tr'ondëk Hwëch'in; and
- Conduct study on the potential impacts recreation has to continued traditional use in the park.

The final suggestion is important because this study suggests that an increase in recreation within the park poses opportunities and threats to continued traditional use of the park. It is therefore suggested that these are identified in more detail, including surveys within the community to capture information on current park use and surveys with park visitors to capture their overall understanding of subsistence hunting. Hunting in the park is a unique feature that poses unique circumstances and conflicts. More targeted information regarding these conflicts should be gathered prior to enacting local

park regulations. As more parks in Canada open their gates to traditional subsistence hunting, we can expect this conflict to broaden and very little research has been conducted to support decision-making.

Finally, this study has shown the incredible resilience of Tr'ondëk Hwëch'in knowledge values and perspectives despite numerous colonial attempts at assimilation. I continue to be impressed by the way Tr'ondëk Hwëch'in has maintained and is continually revitalizing its cultural knowledge. I hope this thesis shows how deeply entrenched Indigenous knowledge, values and beliefs are within a First Nation community that has faced generations of social and cultural upheaval. It shows how adaptive and resilient the community has been and continues to be. I have had many conversations with Western-Canadians who perceive "traditional" to mean hunting with a bow and arrow and not a rifle. The concept of traditional, although used in this thesis, can be problematic. Traditions, like culture, change and adapt through time and it is these very features that make culture important to the discussion about global change. We need to recognize, protect and incorporate cultural adaptations so we as a global community can continue to adapt to our changing world.

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Appendix A: Interview Guide

During the interview I would like to discuss the Tombstone/Blackstone/Dempster area with you (by this I mean this general area on this map) - the importance of this area and the importance of caribou. I will also ask you about the proper way to hunt caribou and then I have some questions about Tombstone Park.

*The following questions are for all interviewees except those marked * these are only appropriate for Groups A and B.*

Main Questions / Concepts to Ask	Overall Purpose
What is your full name? ***Do you get out on the land often?**	Establish who I am talking to and what interview "group" they might belong to.
How did you first come to know the Tombstone/Blackstone area?	Person's relationship with the area past and present. Do they still frequent the area - in what capacity?
How would you describe this area to a visitor?	How do they feel about the Tombstone/Blackstone area? What do they think is important about the area
How do you think caribou are part of that land? **OR** **How are caribou connected to this land**	First Q: to see if the relationship is physical, spiritual, what's the first thing that comes to mind? Try to understand how caribou and the land are linked.

***How do caribou care for the Tr'ondek Hwech'in?** ***Do you have any stories about caribou you'd like to share with me?**	Beliefs about caribou. Trying to understand how these are linked and also ask for stories re: people and caribou.
How does caring for the land (or park) care for the caribou? ***What other animals important to the herd?**	The connections between caribou, people and the land and other animals
Do you hunt caribou? **How do you know the proper way to hunt caribou? How did you learn?** **Are there things you were told to do, or not do, while hunting or butchering that you only understood after years of hunting or being on the land?**	Practices and knowledge associated with caribou. Talk about the proper way to hunt, butcher caribou.
How was caribou management different before government regulations? What is the biggest change?	How the person thinks about caribou management past/present.

What do you think of when I say "traditional resource management"? **I there a better way to say the same thing?**	Introduce the concept/term and find out what it might mean to them.
I am trying to understand how people and land (or nature and culture) are connected for First Nations people. What can you tell me about that?	
Now I would like to talk to you about Tombstone Park, more specifically.	
What does the word Park mean to you?	Parks are Western concept, so establish how they feel about parks in general - as a conservation method.
Do you think the Tombstone area is cared for the same way it was before it became a park?	Find out what they think about the park management and how this has changed.
Do you think traditional ways of caring for the land still happen in the park? **What about for caribou?**	Examples of traditional ways of management.
How are Western ideas about conservation different from Indigenous ideas about conservation? ****How does this affect how Tombstone is managed?**	

How did TH become involved in the park management? **What do you think would be done differently if the park was in negotiation today?**	
How is TH culture or values included in the management of the park?	Preamble to Q: For many western folks nature and culture are separate and parks are a Western idea. One of the main themes in my research is trying to understand how a park (a western way of conservation) and traditional ways of taking care of the land fit together. Tombstone Park seems to combine both "ways of knowing", and an important model to understand.
How does the TH community stay linked to Tombstone Park?	

Appendix B: Introduction Letter and Consent Form

Project Information Letter and Statement of Consent

Project Title: The Role of Traditional Resource Management in Changing Conservation Goals: A Proposed Case Study for the Relationship between Tombstone Territorial Park, the Tr'ondëk Hwëch'in and Caribou

Interviewer: I am Susie Heffner a student from the University of Northern British Columbia seeking a Master's degree in the Natural Resource and Environmental Studies Program. I am studying parks and protected areas.

Project Purpose: My research is on the traditional management of caribou and is focussed in the Tombstone area. I am interested in traditional ways to care for caribou and the Tombstone area. I am trying to understand how caribou, land and people are connected and how this may be involved in the management of Tombstone Park. I have some questions about caribou and the park that I would like to ask you. The interview should take an hour or an hour and a half. You do not have to participate and please know that you can withdraw from the interview at any time.

I was given your name by: _____

What will the information be used for? The information will be used to help me try to understand the interactions and connections between caribou, people and the landscape for the Tr'ondëk Hwëch'in. This research will explore how nature and culture are connected and how these links are important in conservation. I hope the results will be useful for the co-management of Tombstone Park and to the Tr'ondëk Hwëch'in Heritage Office. I hope the information will benefit the Tr'ondëk Hwëch'in community by recording traditional knowledge about caribou and this area.

Who will have access to the information? I will record this interview with a digital recorder and the interview will be transcribed into writing. The Tr'ondëk Hwëch'in Heritage Office will keep the digital and written records but I will delete these from my files once the project is complete. The information from the interview will form the basis for my Master's thesis and

you must understand that this is a public document. You will remain anonymous and will be referred to as participant #__. I may want to use quotes from the interview in my thesis to ensure that I don't take what you say out of context but this is a small community so people may know it was you. You can ask that I do not use any quotes from your interview.

How can you get the results of the project? I will hold two community meetings during the project to discuss the results of the research. I will provide the Tr'ondëk Hwëch'in Heritage Office a written report of these results and a copy of my thesis.

Who can you contact about the project? You can contact me at any time at 867-633-4450 or at mcneneys@unbc.ca if you have any questions about the research or this interview. If you have any concerns or complaints about the project you can contact the Office of Research at the University of British Columbia at reb@unbc.ca or 250-960-6735.

Statement of Consent:

I, _____, have reviewed the information in this form and agree to participate in the interview for the project listed and described above. I understand that in participating in the interview I do not have to answer any questions I do not want to and that I can choose to end the interview at any time.

Signature:_____ Date:_____

Witness: _____ Date: _____

Participant #:_____

Requests:_____
_____
_____
_____
_____